ENGINEERING NEWS-RECORD

Rex M. Whitton: No. 1 highway engineer p.50

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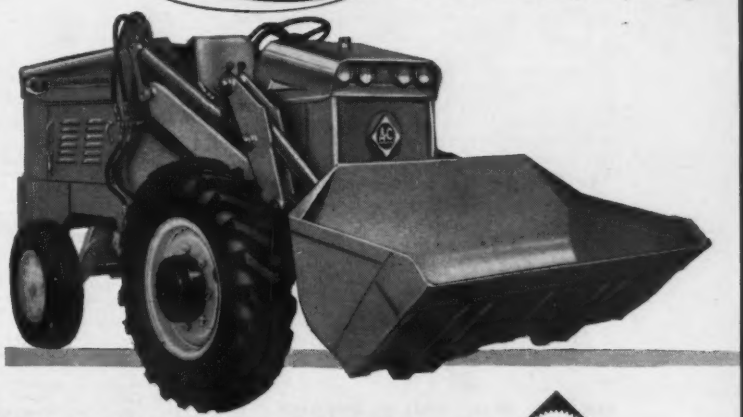

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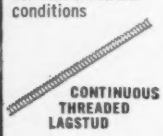

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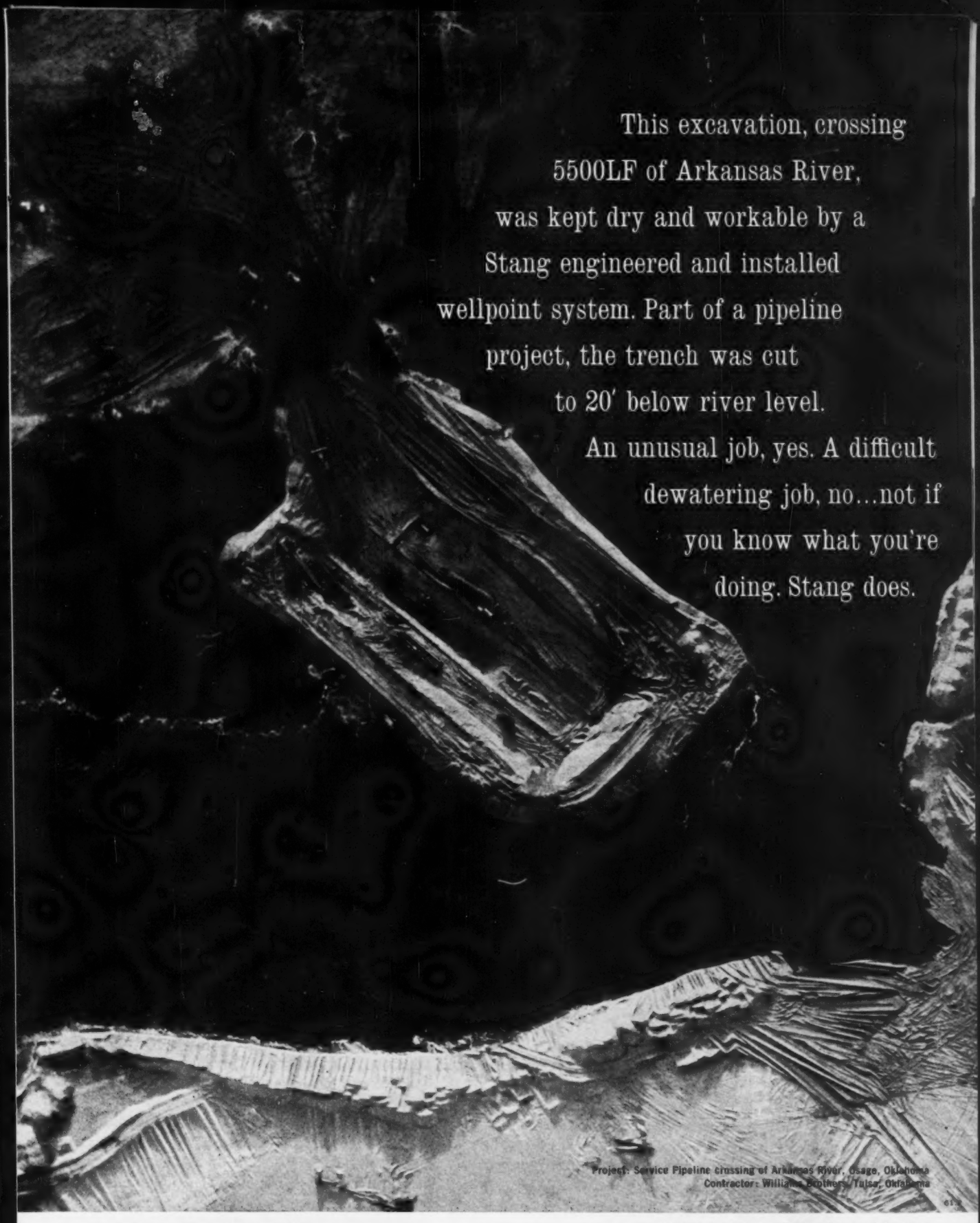
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New tips for

Don't let storage tank contaminate gasoline

One of the basic essentials of good equipment performance is clean fuel; and the best way to make sure the fuel you use is as clean as the fuel you buy is to keep your own storage facilities up to snuff.

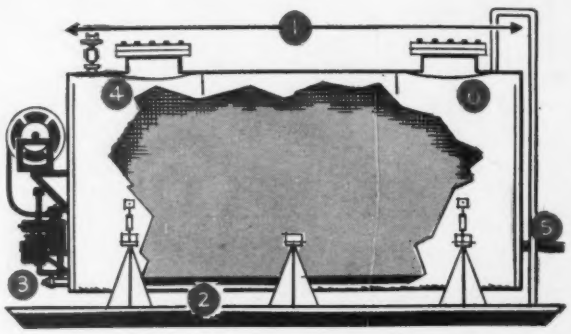
What does it take to make the ideal gasoline storage tank? Here are some of the specifics that Texaco engineers have found to be most important.

The ideal gasoline storage tank has:

1. Plenty of room. Every time you fill a tank you stir up the sediment at the bottom. The bigger the tank, the less it has to be refilled, and the longer the sediment stays settled on the bottom.

2. Welded construction.

3. A 1½" drain valve, located at the lowest point.



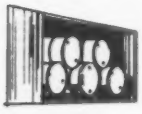
4. A large hand hole plate or manhole, to make cleaning easier.

5. A suction line to the gasoline pump located several inches above the tank bottom, to avoid drawing out the sediment and condensate.

6. A fine-mesh strainer over the filler opening.

Four tips to keep hydraulic oil clean in storage and handling

Even the best maintenance techniques won't keep your hydraulic equipment on the move if you don't keep the oil clean while it's in storage and while it's being put into the machine. Here are four simple precautions that will assure you of getting nothing but clean, clear oil in the hydraulic system:



1. Store the drums on their sides, indoors if possible, but in any event under some sort of shelter.

2. Before you open a drum, clean the top so that no dirt or water can fall into the oil.

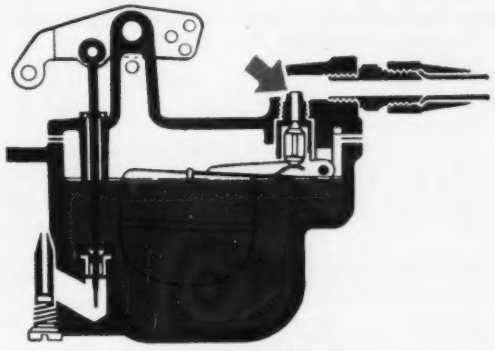
3. Make sure that you use only *clean* hose and containers in transferring the oil from the drum to the equipment.

4. Filter the oil as it enters the reservoir on the machine. If the fill pipe on the equipment doesn't have a filter, use a funnel fitted with a 200-mesh screen.

Protect diesel fuel injector with periodic tank drains

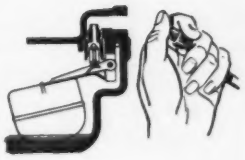
Dirt and water in diesel fuel can ruin a fuel injector in no time. Even if you keep the fuel clean during storage, there's still a good chance that temperature changes will create enough condensation in the fuel tank on your rig to start rusting in the injectors. Several operators have pretty well solved this problem by partially draining the fuel tank once or twice a week. Simply draw off about a gallon of fluid through the drain valve at the bottom of the fuel tank. You lose some fuel this way, but you also get the accumulated water and other contaminants clear out of the fuel system. The cost of the fuel you drain off is a small loss compared to the repair bills you save on the fuel injectors.

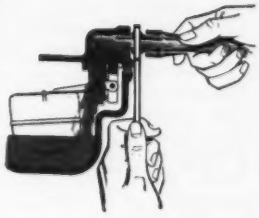
more efficient maintenance



Quick cure for carburetor flooding

Repeated stalling and hard restarting is often caused by a tiny particle of grit, which lodges under the carburetor float needle valve, lets too much gasoline into the carburetor and causes flooding. You can often solve the problem with the following routine: disconnect the fuel line at the carburetor and plug it with a cork, a pencil or anything else that will fit. Then run the engine until you've used up all the fuel in the carburetor. Reconnect the fuel line, crank the engine, and the rush of gasoline into the empty carburetor will often flush the foreign matter out of the needle valve seat. If you have a friend but no cork, have the friend start the engine while you plug the disconnected line with your thumb. Same difference.





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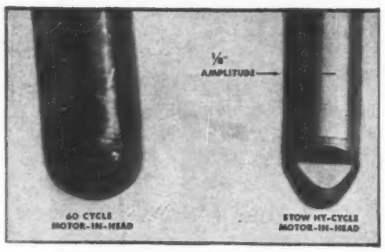

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Reader Comment

Crosstie Saga—Last Chapter

SIR—It might appear unusual for one who has been engaged in the lumber and timber products industry for forty years to defend a substitute for wood. I think that Mr. C. M. Burpee of American Wood Preservers Institute, in his letter (ENR June 1, p. 8), made some misleading statements as to quantity of raw material available for wood crossties.

I want to make it clear that I have a selfish interest in the success of the concrete tie. We have worked with the American Concrete Crosstie Corp. of Tampa, Fla., and have developed a satisfactory laminated wood tie pad for use with this tie.

As to the contribution of pressure preservative treatment increasing the life of the wood tie, there is no argument here. Without preservative treatment, our laminated tie pad would be worthless. And unless selected wood is used, the wood tie will wear out, regardless of preservative treatment.

Ample raw material for the wood tie is available in almost unlimited quantities here in the Southeast, provided all suitable raw material is included. If all suitable raw material is included in a projection for future wood crosstie material, then a considerable increase in price for the wood tie would be necessary.

Our timber stands, in both pine and hardwood, are far from the quality of twenty-five years ago. This is certainly true in the Southeast and I am sure this would apply to the whole country.

Stumpage values have increased over the years. A producer of wood ties must compete with saw logs and veneer logs. Based on the present prices paid for wood ties, much higher stumpage prices can be obtained if the timber is cut for saw or veneer logs. This results in very low grade material for crossties. You can treat a tie from low grade material against decay, but you still have low grade material, which will wear out much sooner than high grade timber.

Comparing the quality of raw material used in ties produced today as against wood ties produced twenty-five years ago, only one answer can be obtained, a much shorter life for the wood tie produced today as compared to the tie produced twenty-five years ago.

In the Southeast, most crossties have been produced by the small ground sawmill. Every time the minimum wage is increased, many small ground sawmill operators are forced out of business. When the minimum wage increases to $1.15 per hour, I think this will be the end of the small ground sawmill. Only the large and efficient sawmills, equipped to chip their waste material for sale to paper mills, will be able to survive. The large sawmills cannot afford to cut wood crossties without a considerable increase in price.

There is no escaping the fact that in the future, the quality of the wood tie will go down and the price will go up.

W. A. STILLEY, JR.
Stilley Plywood Co., Inc.
Conway, S. C.

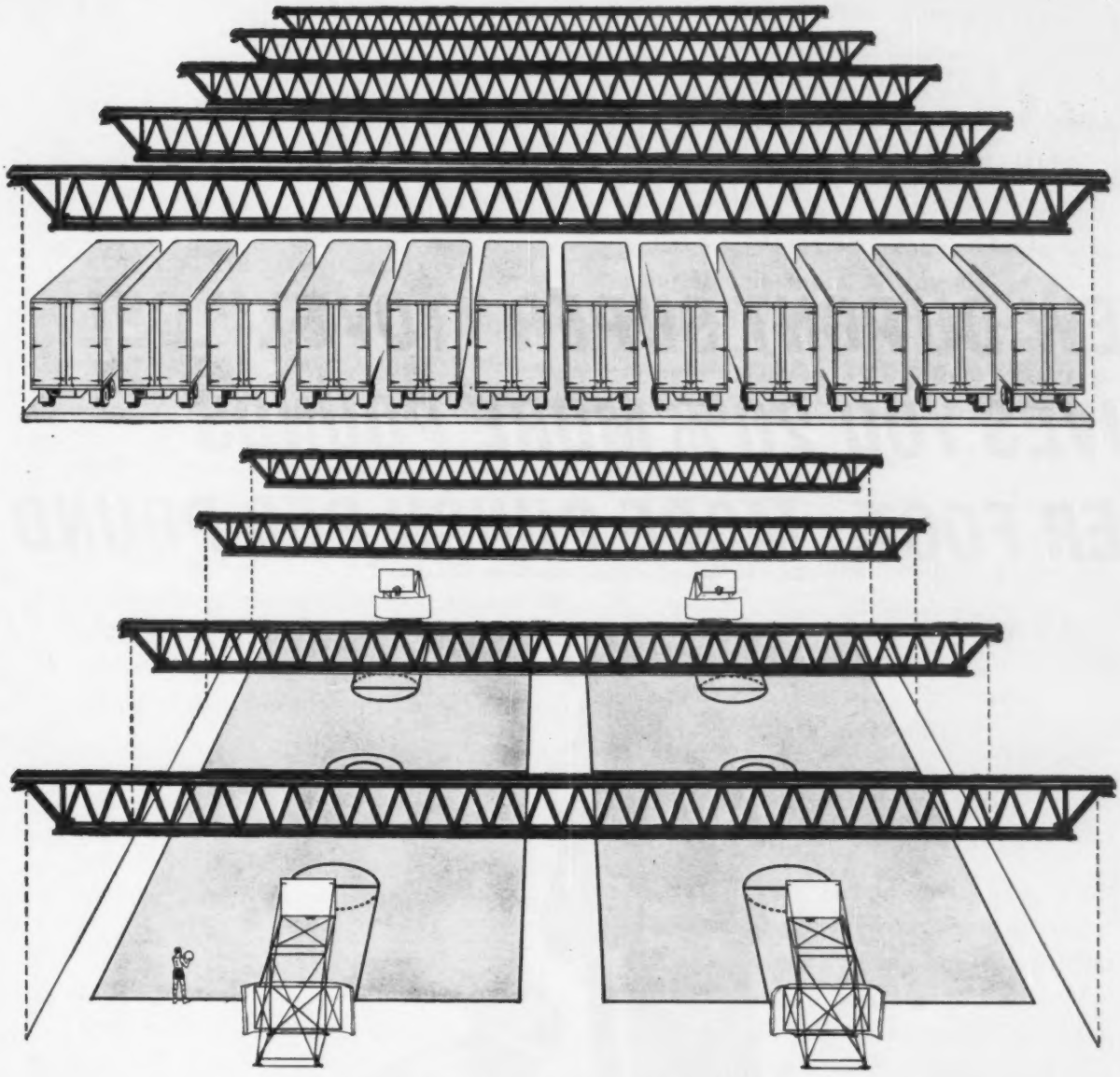
SIR—Your article on concrete crossties (ENR April 6, p. 32) and subsequent letters from readers have been most timely.

The portland cement industry is greatly interested in the possibility that in the near future concrete crossties may be able to serve the railroads of North America as widely as they now serve railroads abroad. Having followed the growth of the concrete crosstie over a period of many years, we are convinced that if this tie is to assist the railroads in continuing their admirable record of safe service, its development must follow the established route of sound engineering. To date, the concrete crosstie in the U. S. has followed this path. There are clear indications that its successful application soon may be realized on many railroads here.

In order to benefit from European experience with this product and to observe concrete crossties now in service, the Portland Cement Association sponsored an investigation in England, Sweden, France and Germany during March and April, 1961. Discussions with designers, manufacturers and user railroads as well as visits to producing plants and field installations resulted in several conclusions. The most encouraging conclusion is that in Europe the concrete crosstie is no longer an experiment, but is a mature development. Railroads and manufacturers alike acknowledge that this development was slow and that many changes were made before the successful products of today were achieved. Although minor modifications are still being considered, the railroads are enthusiastic about the advantages of concrete ties, particularly for use with long welded rails. They also anticipate that greater service life and low maintenance of the concrete tie may result in sizable savings in track maintenance.

(*Reader Comment continues p. 10*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



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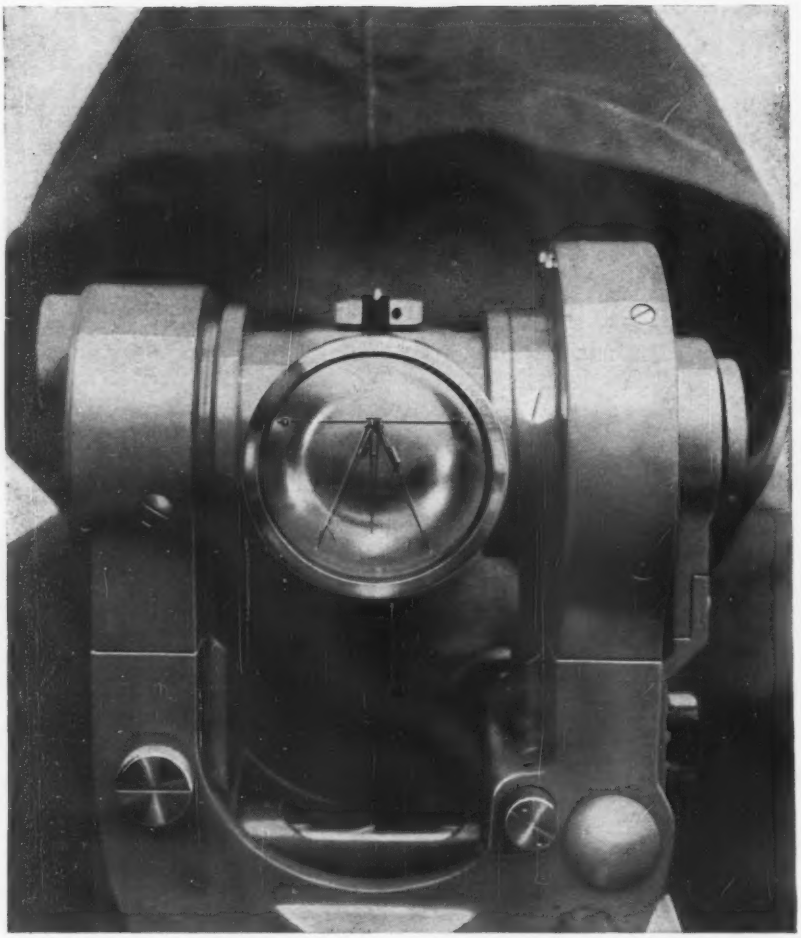

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. . . Reader Comment

Although true service life is yet to be determined, experience to date indicates that the anticipated life of 50 years or more may well be achieved. European concrete ties not only are carrying their loads ably, but also are resisting the deteriorating influence of freezing, thawing and ocean spray without distress.

WALTER E. KUNZE
Manager
Structural & Railways Bureau
Portland Cement Association
Chicago, Ill.

Brighter A-Power Future

SIR—Your article Partnership Woes Spark a Drive for Federal A-Power (ENR May 25, p. 20) is not accurate in many details. We feel sure you will want to correct the erroneous impression the article leaves regarding progress in the nuclear power field.

You state (in bold-face type): "There have been no new construction starts in atomic electric power for two years."

Construction of Pacific Gas & Electric Co.'s Humboldt Bay Nuclear Unit at Eureka was started Nov. 11, 1960. Construction of the Big Rock Point, Mich., nuclear plant of Consumers Power Co. was started May 31, 1961. Within the past two years work also has started on: the Pathfinder plant of Northern States Power Company at Sioux Falls, S. D.; the CVTR plant of Carolinas—Virginia Nuclear Power Associates at Parr, S. C., the BONUS plant of the Atomic Energy Commission and Puerto Rico Water Resources Authority at Punta Higuera, P. R.; the Saxton, Pa. plant of General Public Utilities.

Four of these (Big Rock Point, Pathfinder, CVTR, BONUS) are parts of the AEC partnership reactor demonstration program, but none is listed in the table of partnerships accompanying the article. Humboldt Bay and Saxton are privately financed and should not be listed under partnerships, if by partnerships you mean projects where the government is involved financially. But the same is true of Dresden and Indian Point, which were listed. If privately financed plants were to be listed, Vallecitos should have been included. As you know, Vallecitos has been in service as part of the PG&E generating system since October, 1957, and holds AEC Power Reactor License No. 1.

If partnerships with government were being listed, the SGR being built at Hallman, Neb., with Consumers Public Power District should have been included. Hallman was started more than two years ago, but it certainly is part of the partnership reactor demonstration program. The same is true of the Sodium Reactor Experiment at Santa Suzanna, a partnership venture of Atomics International, the AEC and the Southern California Edison Co.

We do not deny that the nuclear power development program has had its

On So. Carolina Water Reservoir project:

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United Air Lines new base at Chicago's O'Hare Field

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. . . Reader Comment

problems, but we do not believe the picture is as gloomy as ENR indicated, reflecting only the opinions of the chairman of the Congressional Joint Committee. Certainly the inclusion of all plants would have made it more optimistic, as well as more accurate.

Only ten years have passed since private industry was admitted into the nuclear power field. In that time 14 plants involving investor-owned utilities have been built, are under construction, or are in advanced planning stages. That is not a bad record for the first decade of a new technology.

Last month C. C. Whelchel, PG&E's Chief Mechanical Engineer, gave substantial evidence of this company's confidence in atomic research and development when he stated: "Except for special situations, we believe PG&E's last conventional steam unit will be installed in the late Sixties."

Thus, in less than two decades from its beginning, nuclear fueling probably will dominate new thermal power generation in California. We submit that such a probability does not indicate "delayed development."

ROBERT R. GROS
Vice President
Pacific Gas & Electric Co.
San Francisco, Calif.

Editor's note: Instead of "construction starts" we should have said "project starts." The idea is that no fresh projects have been firmly committed during the past two years. Those that got brick-and-mortar starts during that period were firmly committed earlier.

The table included only projects with recent or near-future completion dates. Among those excluded were not only the successful projects mentioned by Mr. Gros, but also some failures—for example, Wolverine Chugach, Pennsylvania Power & Light and Florida West Coast Nuclear Group.

"Partnerships," as construed by the federal government for the last nine years, does not necessarily entail federal financial participation, according to Ralph Tudor, San Francisco consultant who helped create the partnership policy during part of the Eisenhower Administration. "Under the partnership policy," said Mr. Tudor, "the federal government attempts to create an atmosphere or climate that will not only permit, but also encourage local utilities, both public and private, to undertake construction and ownership of power-generating facilities" (ENR Sept. 1, 1960, p. 27). Although Mr. Tudor was speaking specifically of water-resource projects, the same partnership concept extends to atomic power.

ENR's Index of Editorial Content for January-June 1961 is now being mailed to those on the Index mailing list. If you wish your name added, please write to: Indexing Dept., Engineering News-Record, 330 West 42nd St., New York 36, N. Y.

MISSILE SILO EXCAVATION

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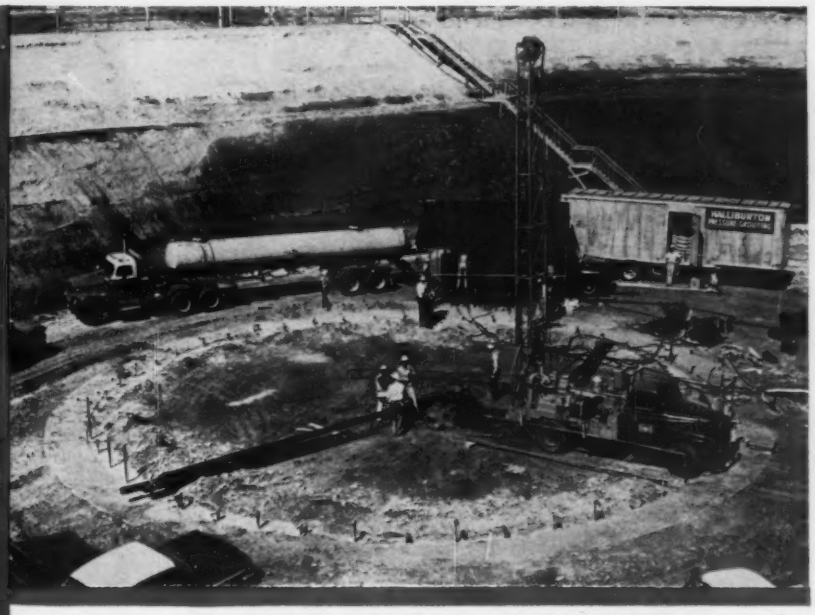

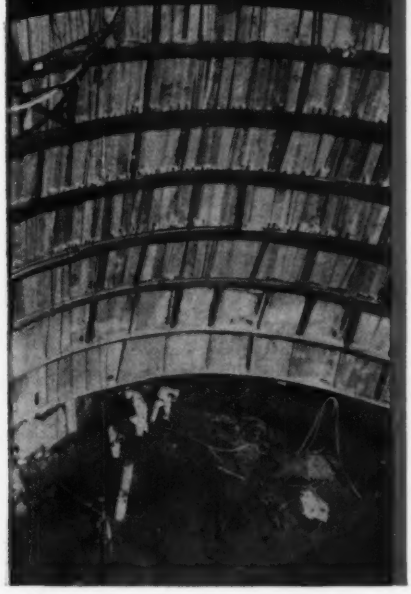

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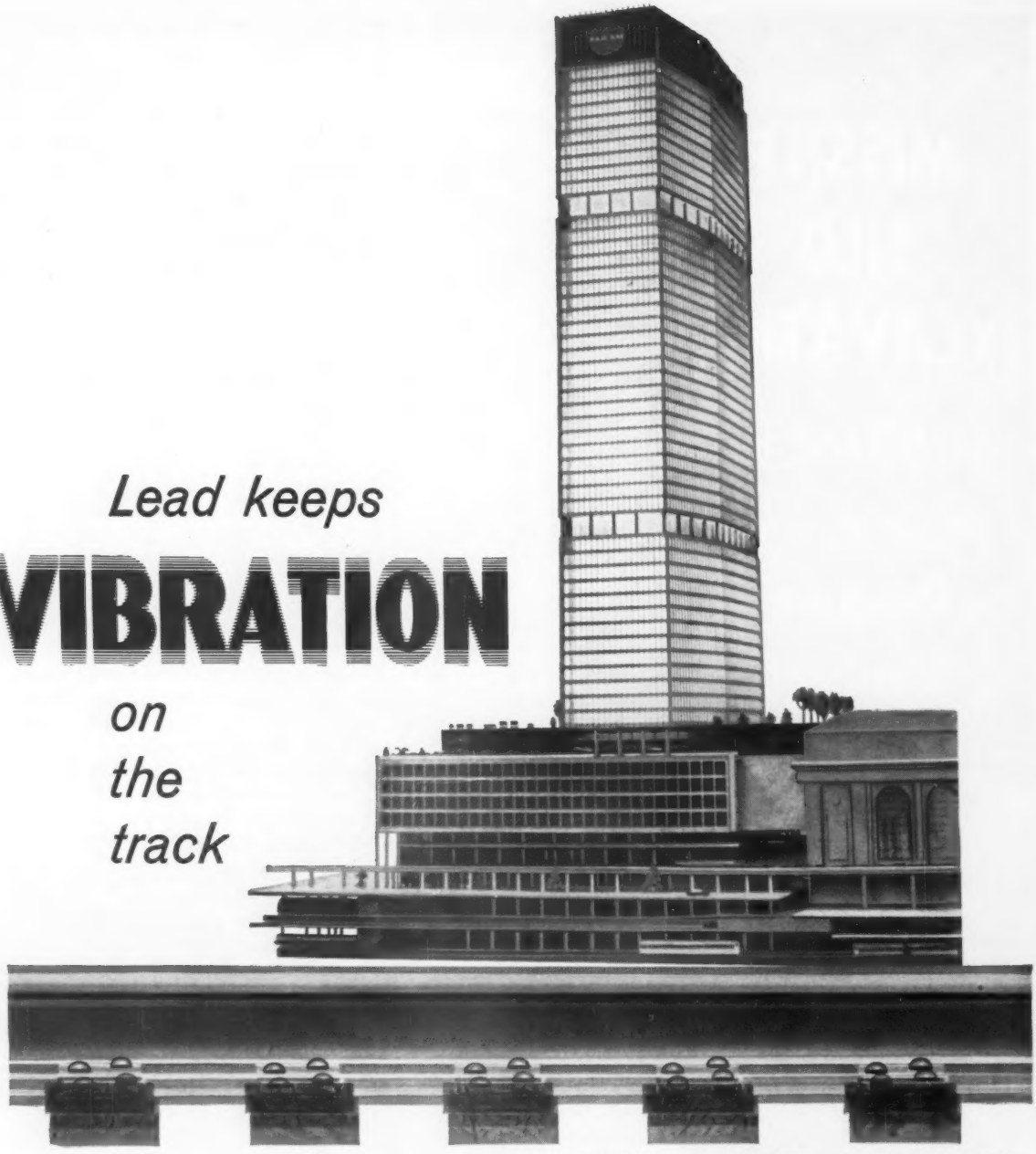

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Vol. 167, No. 4 July 27, 1961

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THE CONSTRUCTION WEEK

ICBM COMMISSION FLEXES MUSCLES—In its first formal action on specific labor problems, the President's Missile Sites Labor Commission last week served notice that is will subject to unfavorable publicity any missile site labor contracts that it considers economically out of line. And it settled a jurisdictional dispute at Walker Air Force Base in New Mexico by dividing the work involved in cable laying between operating engineers and electrical workers.

MORE ON MONTREAL—That 50-or-so-story office tower predicted to rise in Montreal (ENR July 20, p. 17) will be 51 stories high and may turn out to be three towers, not just the one expected earlier. They will all be reinforced concrete. Italian engineer Pier Luigi Nervi (ENR Apr. 27, p. 58) is their designer

COMPULSORY ARBITRATION?—Whether or not an international union can force one of its locals to arbitrate a collective bargaining dispute rather than strike is the subject of a public hearing in Baltimore. The Baltimore local—one of IBEW's oldest and largest—refused to submit its wage dispute to the electrical industry's Council on Industrial Relations. It struck for the first time in 35 years. IBEW called the hearing to consider revocation of the local's charter.

A CRASHING BORE—In six days of three-shift operation ending last week, tunnelers advanced a single heading 603 ft through hard slate in a 12-ft horseshoe bore in California's Sierra Nevada. The job is the Forbestown Tunnel, one of three under construction for the Oroville-Wyandotte Irrigation District's South Fork Project by Oroville Project Contractors, a joint venture of Guy F. Atkinson Co., Arundel Corp., L. E. Dixon Co. and Ostrander Co. The performance set a new one-week speed record for this size tunnel.

HARD HAT AIR—Not only should you wear your hard hat, you should pull it down over your ears. A San Diego construction worker survived a sewer trench cave-in because his hard hat trapped enough air to sustain him until he was dug out.

SELF-DEFENSE—A $100,000 dragline, located on a sandbar while rechanneling the Arkansas River near Little Rock, was forced to build an island to protect itself. A heavy, two-day rain raised the river so that it would have flooded the machine's diesel engines.

DACHSHUND DRAFTED FOR DRAIN DUTY—Dachshund means badger dog and one of the four-legged frankfurters is solving a problem that badgered Los Angeles Flood Control District engineers for some time. The long, thin canine drags measuring tapes from manhole to manhole for engineers taping pipelines. The dog increased production 75%.

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WASHINGTON OBSERVER

- Defense construction unchanged by Berlin
- Administration sails into saline water

- **President Kennedy's new defense plans are bound to have broad effects on the economy—but mostly over the long haul.** Early studies have shown that: There is enough idle industrial capacity to handle an increase in military production; raw materials are in sufficient supply to avert civilian shortages; and the inflationary impact should be minimal—except possibly for some scare buying. The one immediate effect has been to put a virtual end to speculation about a tax cut next year.

  The military build-up envisioned by the President also would have a liimted early effect on the construction industry. Except for fallout shelters (see p. 19), defense construction is proceeding at a normally rapid pace. Congress, more than usually worried about reports of waste and extravagance, is not likely to be panicked into huge new programs in this area—short of war, of course. Thus, no shortages of materials (such as structural steel) are anticipated.

  The House Appropriations Committee saw fit to cut military construction spending, despite the Berlin crisis. Its rceommended $886-million spending bill for fiscal 1962 is nearly $150 million less than Administration estimates and more than $100 million below last year's appropriation. Yet, nearly 40% of the money is in support of missile programs—Minuteman, Polaris, Nike-Hercules and Hawk.

  What the Committee cut were "projects not clearly essential to the military posture" now or in the foreseeable future. But it dealt relatively freely with construction programs in support of research, development and test activities of the military. It included $17.5 million for an aerospace environmental test chamber at the Arnold Engineering Development Center in Tennessee. And it included $36.6 million for additional work on the Navy's radio telescope at Sugar Grove, W. Va., even as it set a $135-million limit on spending for the unit. There have been reports that total cost of the job could run to $180 million (ENR July 6, p. 21).

—

- **Construction of at least 54 saline water conversion plants is planned by the Kennedy Administration in the next four years.** Even this huge expansion of the program may be enlarged if there is a scientific breakthrough in conversion methods. The four-year program, submitted to Congress by Director Frederick MacGowan of the Office of Saline Water, would cost $178.4 million. So far, the program has never cost the government more than $3 million in a single year.

  Congress is likely to cut the program somewhat; but how much is anybody's guess at this time. Here are Mr. MacGowan's cost estimates: $37.5 million for research and development; $82.6 million for 13 new demonstration plants; $25 million in loans for construction of 10 conversion plants; and $33.3 million in grants to municipalities for construction of 31 other plants.

  The Interior Department originally asked Congress for an open-end authorization to spend all the money it deemed necessary. The House Interior Committee wouldn't go along with this and sent Mr. MacGowan back for estimates. Neither he nor Interior Secretary Stewart Udall is willing, because of the possibility of new developments, to make any cost estimates beyond the four years.

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Corps Will Make Shelter Survey

- **U. S. Army Corps of Engineers' survey will follow recent transfer of civil defense to Pentagon.**
- **Survey could mark the beginning of a fallout shelter construction program costing billions.**
- **Administration hopes that reorganization will stir congressional enthusiasm for civil defense.**

The U. S. Army Corps of Engineers will make a nationwide survey of existing buildings and other structures that might serve as fallout shelters.

Defense Secretary McNamara will direct Lt. Gen. Walter K. Wilson, Jr., Chief of the Corps, to begin surveys in 43 district offices throughout the country. In addition to surveying existing structures, the Engineers will advise on building protective structures.

The survey will mark the first action following last week's Presidential Executive Order shifting civil defense responsibility of the Office of Civil and Defense Mobilization to the Department of Defense.

Fallout shelters, opposed to A-blast shelters, must provide a minimum radiation factor of 100, according to OCDM specifications issued last year (ENR Sept. 22, 1960, p. 50). (Protection factor equals the radiation that a meter would register just outside the shelter divided by the radiation registered inside the shelter.) In contrast, a blast resistant shelter may be designed to withstand pressures as high as 150 psi.

The district offices provide a ready-made force of professional engineers for the job. They have contacts in all major U. S. cities with municipal officers, architects, engineers and contractors.

• **Billions for shelters?**—The civil defense reorganization could mark the beginning of a nuclear fallout shelter program costing hundreds of millions in the next few years.

This week the Defense Department will ask Congress for at least $200 million extra to cover expanded civil defense efforts for this year. Among the Pentagon's new responsibilities are to "develop and execute":

- The fallout shelter plans.
- A warning and communications system.
- A program to aid local governments in planning post-attack services (e.g., health, sanitation, debris clearance, water supply, and fire-fighting).

About $50 million in the forthcoming $200-million supplemental budget request would finance the Army Engineers' survey. Another $50 million might go toward reinforcing basements of existing buildings to provide fallout protection. And the remaining $100 million would probably match appropriations by local governments planning fallout shelter programs.

Part of this federal aid to local governments would probably finance a home air raid warning system functioning through electric power outlets.

Despite these expanded federal plans, the Administration's proposals still fall short of the massive shelter construction programs proposed by New York's Governor Nelson Rockefeller and others. These programs would cost from $10 billion to $20 billion.

General Wilson
New Corps Chief gets new chore.

• **Untogetherness**—Despite the Administration's new interest, there is still considerable congressional resistance to spending large sums for fallout shelters.

Says Sen. Stephen M. Young (D., Ohio): "The survival of 180 million Americans . . . depends not on futile shelter programs inspired by a caveman complex, but on solid workable international agreements to disarm.

"We ought to be talking about building homes for our people rather than hoodwinking them with foolish prattle about underground shelter. . . . In the nuclear age, there can be no realistic civil defense program."

The House has recently trimmed the Administration's current civil defense budget from $104 million to $79 million. Last week the Senate was considering a $95-million appropriation.

• **Strategy shift**—The Administration hopes that the reorganization will stir congressional enthusiasm for civil defense. The Office of Civil and Defense Mobilization has little stature in Washington. Transferring civil defense to the military budget should make Congress take it more seriously, reasons the Administration.

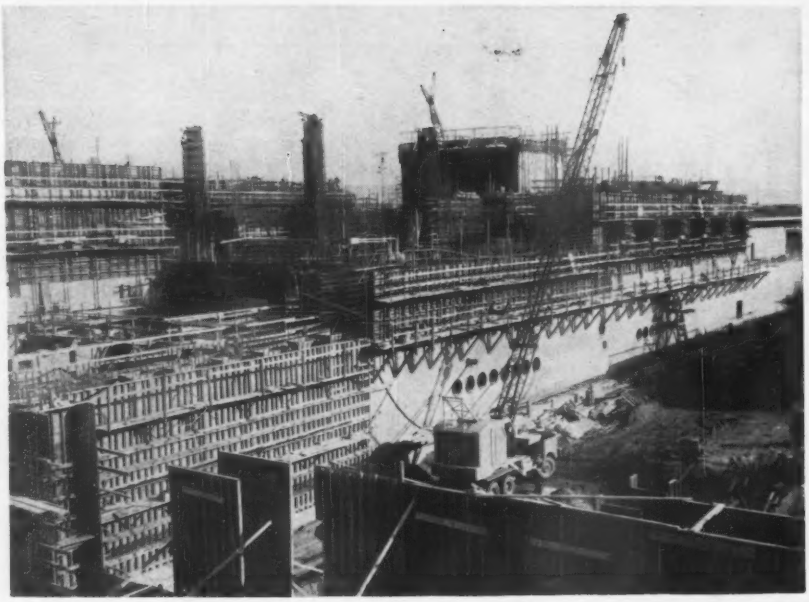
Congressional indifference has greeted the federal civil defense program since its beginning in 1950. Congress has consistently slashed its budget requests; top White House officials have seldom showed concern for its operations.

Controversy about whether bomb shelters or evacuation from large cities would provide the best protection for civilian populations has hampered the program.

Now, since the advent of ocean-spanning guided missiles, the consensus in civil defense planning favors fallout shelter construction as the best—and probably only—type of limited protection that could be provided for civilian populations that are located outside immediate target areas.

• **Lost, one letter**—The OCDM will now become the OEP—Office of Emergency Planning. It will remain as part of the White House.

OEP duties will include advising on food stockpiling for the Department of Agriculture, and medical supply storage for the Department of Health, Education and Welfare. It will continue handling import restrictions, material stockpiling and industrial mobilization.



HANFORD REACTOR will be completed late in '62, could produce power in fall of '64.

AEC Money Bill Moves Ahead

Action by Congress last week cleared construction for the two big items in the Atomic Energy Commission's $365. million fiscal 1962 construction bill.

Votes by the House of Representatives and the Senate guarantee the building of a $114-million, two-mile-long linear electron accelerator on a 400-acre site near the Stanford University campus.

The House rejected a $95-million item for electric generating facilities at Hanford, Wash. But the plan to generate 763,000 kw was later approved by the Senate, and now the bill is up for final decision by the two houses.

Republicans hotly opposed the turbine-generators at Hanford as a public power project, and as a precedent-setting move to build federally owned steam plants outside the TVA area. But no matter how the controversial nuclear generating equipment fared, it would not have affected status of the $145-million reactor itself. Approved in 1958, it is now under construction by Kaiser Engineers and the General Electric Co. (see picture). Building of the reactor is to be completed by October 1962. Dual-purpose plutonium production and power operation is to start in the fall of 1964. The reactor's dual-purpose period will run through 1972, and its estimated power lifetime will continue until 1997.

Stanford's Microwave Laboratory will be prime construction contractor to AEC for the high energy accelerator. Stanford has given the California combine of Aetron-Blume-Atkinson a cost-plus-fixed-fee subcontract to be its architect-engineer-construction manager.

The accelerator, to carry out basic research investigations on the behavior of sub-atomic particles, is to be completed by 1966.

The AEC construction bill also included a $16-million addition in construction money for an advanced test reactor (ATR) on which AEC will complete design and begin construction this fall. The reactor is located at the Commission's National Reactor Testing Station near Arco, Idaho. The latest addition raises to $40 million the total amount approved by Congress for building the reactor. It will be used primarily for materials testing in support of the Naval Reactor Development Program.

The remaining items in the bill cover plant construction in the Commission's research-development programs.

Mayor Wants New Plan For New Phillies' Stadium

Responding to public pressure, Philadelphia's mayor proposed a new plan for administering construction of a $10-million Phillies' baseball stadium.

The new proposal, which entails creation of a five-member authority, would require open bidding. Under the original plan, Matthew H. McCloskey, as co-lessee of the stadium tract with the Phillies, would build the stadium.

Mr. McCloskey, president of the McCloskey & Co. construction firm, is national treasurer of the Democratic Party.

Civic groups want a referendum to decide whether the stadium shall be built. Authority projects don't need voter approval.

Seattle Gets License For $97-Million Dam

A construction start is near on Boundary Dam on the Pend Orielle River. Seattle City Light, which recently received a Federal Power Commission license to build the dam, is requesting a $4-million appropriation to start work on the $97-million project. City Council approval of the proposed power project will be routine.

The city's bid for the license to build Boundary Dam won out over a competing application for the "Z Canyon" Dam proposed by the Pend Oreille Public Utility District.

The FPC favored Seattle's proposal, because it would be a bigger project and use practically all available head on the river. Moreover, Seattle needs the power; the PUD doesn't, according to Power Commission.

Boundary Dam will be a thin concrete arch structure, 386 ft high and 975 ft long. It will back up a 17-mile-long reservoir with a usable storage capacity of 42,000 acre-ft.

An underground power plant will have an initial capacity of 540,000 kw, which will ultimately be raised to 810,000 kw.

The project is located in the northeastern corner of the State of Washington near the Canadian border.

Larger Lock to Replace TVA Lock That Failed

The Tennessee Valley Authority has decided to replace and enlarge Wheeler Lock rather than repair the wall that collapsed on June 2 (ENR June 8, p. 28). The project will require a $7-million emergency appropriation from Congress.

When engineers investigated the riverward wall that was left standing, they found cracks and signs that dangerous cracking would continue.

On this basis, TVA decided to demolish the remaining wall and build an entirely new lock. The replacement structure will be just as wide, 60 ft, as the old lock and have the same lift. But, it will be 400 ft long—40 ft longer than the old lock—to accommodate two 195-ft barges.

The new lock will share a common wall with another 100 x 600-ft lock now under construction adjacent to the lock that failed.

TVA plans to shift construction emphasis from the big lock to the smaller replacement structure. They'll work round-the-clock, six-days-a-week to complete the small lock by next June. The crash program will delay completion of the large lock, set for 1963, by three months.

TVA is building both structures with its own forces.

JFK Asks Unified Water, Power Policy

President Kennedy has asked Congress for a unified, comprehensive policy for development of national water and power projects along lines recommended last January to the Senate Select Water Resources Committee.

The Administration proposes in legislation just given to the Senate and House Interior committees three major steps:

- Creation of a water resources council in the executive department to carry out a continuing study of needs and recommend federal water projects.
- A series of river basin commissions, to be set up by the President in various areas on recommendation of affected governors.
- A $50-million, 10-year series of federal grants to states to carry out local river basin planning.

The proposed national water resources council would get the job of establishing new standards for determining the feasibility of federal multi-purpose projects. This would call for revision of the present standard (A-47) used by the government in determining feasibility. The Budget Bureau, which prepared the present standard 10 years ago, has been working on ways of revising it. But President Kennedy's proposal would seem to put the Budget Bureau study in limbo until the water resources council could be approved by Congress and properly staffed.

Here are high points of the President's plan:

- A water resources council would be set up, composed of the Secretaries of Interior, Agriculture, Army, and Health, Education and Welfare. Interior Secretary Stewart Udall probably would be named chairman. Permanent personnel and a $19,500-a-year staff director also would be provided. The council's permanent duties, aside from the special study of feasibility standards, would be to:

Conduct a continuous study of water supply needs in each region of the U. S.

Establish principles and methods for making comprehensive regional and river basin plans, and for developing federal water projects.

Approve or revise plans submitted to it by the various river basin commissions.

- River basin water resources commissions could be set up by the President, on request of any governor in one or more of any state lying either wholly or partially within a water resource region, river basin or group of basins for which the commission would be established.

These commissions would be composed of one member from each interested federal agency (Bureau of Reclamation, Corps of Engineers, Federal Power Commission), and one or more members from each state affected, plus possible added members from involved interstate compact commissions or international commissions. Any commission could be terminated at will by the President. Commission chairmen would be named by the President, and they would hold no other post during their tenure.

Each basin commission would:

Serve as the "principal agency for the coordination of federal, state and local plans for the development of water and related land resources in its region."

Prepare, and submit to the water resources council, comprehensive and long-range plans for water development.

Initiate studies in its area.

Make an annual report to the councils.

- A total of $5 million yearly for 10 years would be made available by the federal government in grants to states for the conduct of smaller-scale water project planning. Federal funds would be handed out to individual states, by recommendation of the council, based on four criteria: population, area, financial needs, planning needs.

Union Station gets Grand Central treatment as . . .

Diesel Develops Second RR Depot

Chicago's Union Station is slated for a $200-million office complex.

Diesel Construction Co. of New York City, and City Centre Properties, Ltd. of London, the same American and British interests redeveloping New York's Grand Central Terminal, have joined forces to build over the tracks of Chicago's busiest railroad center.

The agreement provides for a total of 330,211 sq ft of air rights over three blocks. These rights include: 148,372 sq ft in the square block between Jackson and Van Buren Sts., south of Union Station; the 91,248-sq-ft block north of the concourse, between Monroe and Adams Sts.; and the 90,591-sq-ft block between Madison and Monroe Sts. Allen J. Greenough, president of the Chicago Union Station Co. and Erwin S. Wolfson, chairman of the board of Diesel, announced the project last week.

The buildings will be supported by caissons placed between the tracks in the train sheds. In general, the engineering and construction techniques will follow the pattern of Grand Central's Pan American Building, so that rail traffic will not be disrupted during construction.

Preliminary designs hint at three high-rise office buildings and possibly a hotel and parking facilities. However, negotiations with one large prospective tenant are still under way, so definite plans, the final size and area are not expected to be ready for a few months.

The project's total cost is roughly twice the cost of the Pan American Building, Mr. Wolfson expects to start construction late this year on the first building, estimated at $30 million.

90-Year-Old Sewer Caves In; Three Die

Philadelphia's cave - in - prone Mill Creek Sewer swallowed up four row houses and three lives last week. Four of seven residents of the old frame buildings were dug out of the rubble-filled 35-ft-deep pit caused by the cave-in. Two bodies were recovered and a third victim is missing.

Cause of the collapse is not yet known, but Water Commissioner Samuel S. Baxter, who is also the city's emergency coordinator, gives four possible causes:

- Water and sewage flowing through a break in the 14½-ft-dia sewer could have undermined the buildings.
- The sewer itself could have collapsed.
- There may have been a structural failure in one or more of the houses.
- There may have been an explosion, perhaps caused by gas, but this is considered least likely.

The original Mill Creek Sewer dates back to the 1870s and was built along the line of Mill Creek, a peaceful tributary of the Schuylkill River.

According to Commissioner Baxter: "The sewer was standard for the period of its construction in Philadelphia. It has a circular brick arch with 18 in. of brick in the lap ring, and designed with brick and masonry haunches."

Although the sewer is now 90 years old in its oldest sections, it held up well for many years. But, there were cave-ins in 1931, 1932, 1938, 1949, 1951 and 1952. Only one life was lost over those years.

A once peaceful country stream converted to a sewer now presents a growing peril to an extensive section of the city along the meandering course of the sewer, which zig-zags its way southeasterly, finally emptying into the Schuylkill.

Engineers who built the sewer in the 1870s and '80s were praised for their truly fine engineering feat involving conversion of the creek bed to a much needed sewer. Philadelphia was suffering a population explosion then and had expanded across the Skuylkill River by this time.

City engineers, to this day, praise the original construction job, but note that their predecessors could never have forseen that the tunnel would have to support heavily traveled paved streets, homes, and apartments, as well as commercial and industrial buildings.

Commissioner Baxter says although the sewer is in reasonably fair condition

in Collapse

for its age it also has been subject to stress due to overloading. In times of storm the sewer runs full and operates under hydraulic head.

Immediately after the collapse scores of residents were ordered from their homes. The commissioner said, at the time, that additional cave-ins might be caused from the pressure applied to the old sewer as water, dammed by the debris, backed up in the line.

Millions have already been spent in various reaches of the sewer to prevent just such a tragedy as last week's.

"In recent years, a program of rebuilding the sewer has been under way," explained Commissioner Baxter. "In general this has included the complete replacement of the old brick sewer with a larger, reinforced concrete structure."

Over $2 million was spent in 1953 to replace two sections of the big sewer and at the present time, a $1-million contract is under way in 46th St. between Market St. and Haverford Ave.

Most of the cave-ins over the years occurred under streets, but death and the threat of large-scale property damage haunts the entire meandering length of Mill Creek.

"In the 2,000-ft section in which the accident occurred, plans have been under way to replace this sewer in 1962. Most of this stretch of the sewer lies under houses. The original plan was to re-route the sewer in street beds. As a result of the accident, the city plans to condemn more than 100 houses on the line of the sewer and rebuild the sewer in its present location," Commissioner Baxter told ENR.

An interesting engineering facet of the 30-year history of cave-ins is that the original 1931 failure occurred closest to where the sewer discharges into the Schuylkill. Each succeeding cave-in came farther upstream. Last week's tragedy followed true to form.

Hundreds of homes have been damaged by the cave-ins, and scores of homes along the route of the sewer have been condemned and razed since 1930.

The current change and speedup in plans to rejuvenate the ancient sewer in the remaining areas of hazard involves extensive demolition, but city engineers feel it's the surest way to avoid further tragedy.

Railroad Tunnel Caves In After Wood Shoring Burns

Engineers of the Northwestern Pacific Railway set to work this week to begin restoration of a freight line tunnel at San Rafael, Calif., that caved in, dragging a 12-unit apartment house down with it.

A fire caused the collapse. Two boys admitted to police that they started the blaze by putting burning rags between the tunnel's timber supports.

So far, no estimate has been made of the damage.

The tunnel is 22½ ft high from the rails, 17 ft wide, and 1,363 ft long. Timber lines most of its length. Concrete lining runs 91 ft from the concrete portal at one end and only 33 ft at the other end.

Two timbered sections 650 ft and 150 ft long near the ends collapsed and a 12-in. water main over the roof of the tunnel burst. Investigators aren't certain yet whether the collapse of the tunnel should be blamed on destruction of the timbers by fire or weakening of the earth by water.

The San Francisco & North Pacific Railway built the tunnel in 1879. It is now owned by the Northwestern Pacific, a subsidiary of Southern Pacific Co. It was modernized in 1957-58.

Ace in the Hole

Threat to impact area aid may get school bill action

President Kennedy holds a carrot in front of Congress—in the form of aid to federally impacted areas—to get action on some sort of school construction bill this year.

The legislation under which special assistance goes to school districts "impacted" with children of employees in federal installations expired June 30. The President warns that, unless Congress gives him a general school construction bill, he might veto any separate extension of the impacted areas money. Mr. Kennedy has recommended tapering off this aid anyhow.

Some $200 million a year is involved in impacted areas aid, and three-fourths of the Congressional Districts share in it. Since school budgets for the coming year have already been made up on the assumption such aid would continue, many congressmen are extremely concerned about it.

The bulk of this aid is concentrated in the districts of southern congressmen who are opposing general school aid. Northern Democrats, who benefit relatively little from it, can refuse to support extension of impacted aid unless Southerners go along with some general federal aid to education.

Democratic strategists are thinking of two main approaches to getting school aid through this year. One would be to by-pass the obstreperous House Rules Committee, which last week buried three education bills: grants for school construction and teachers' salaries, including the impacted areas program; loans to private schools for construction of classrooms; and college scholarships and construction of college academic facilities. But the procedures for by-passing the Rules Committee are cumbersome.

More likely is an effort to bring out a new bill limited to grants for school construction, in reduced amounts, and continued aid to impacted areas. There is some hope that Catholic members of the House, who oppose general school aid unless loans are also extended to parochial schools, would go along with this. Their biggest objection is to aid for teachers' salaries that would make it harder for private schools to compete for lay teachers.

President Kennedy at his press conference last week made a plea for passage of his three-year, $2.5-billion program of grants to public schools and hinted that the fate of continued aid to impacted areas may be tied to it. He refused to support or oppose loans to private schools. He said such loans would not be unconstitutional.

Around the World . . .

• **Where there's smoke, they're fired**—Howard F. Foltz, acting director of the division of public works in Indiana's Department of Administration, was fired this month by Gov. Matthew E. Welsh. Dismissal came after the state's construction and purchasing officer told a legislative study committee that architects fail to supervise and inspect all phases of construction of state buildings.

• **San Diego Airport expands**—San Diego's Lindbergh Field is bursting at the seams, so plans are in the making for a new $1.5-million airport and terminal tower. The new facilities will be erected on the Harbor Drive side, near the Coast Guard Air Station, and offer parking for 10,000 cars. The old terminal will be used for non-scheduled airlines.

• **Fish are lazy too**—Ever increasing numbers of spawning salmon are counted at McNary Dam, upstream of The Dalles Dam. The Dalles fish ladder makes life easy for the salmon on their way to Columbia River spawning grounds. The fact that The Dalles Reservoir has flooded out two hazards—Celilo Falls and Indian and commercial fishing sites—has also contributed to the survival rate.

• **Hard drinkers fight City Hall**—Residents of Marshallville, Ohio, complained their drinking water was reddish, too hard and tasted awful. The city built a $40,000 water softening plant. Now citizens say the water is too soft and tastes terrible. Upshot: Minerals will be added to the water to make it "a little hard."

• **Design contest**—An Argentine architectural competition, for design of a $4.2-million national library in Buenos Aires, offers a prize of 1.2 million pesos ($15,000). Details: Arquitecto Adolfo Enrique Storni, Director General de Arquitectura y Trabajos Publicos y Asesor del Concurso, Direccion General de Arquitectura, Talcahuano 1261, Buenos Aires, Argentina.

• **Breaking the Back Bay barrier**—A three-year court fight against the 80-ft building height limit in Boston's Back Bay area ended in a decision for the challenger. The State Supreme Court has ruled in favor of the Clarendon Development Corp., which plans to build a $3-million, 17-story apartment house.

• **Dredging down under**—World-wide bids will be asked for dredging 600,000 cu yd of rock from Newcastle Harbor, New South Wales, Australia. A project is already under way to remove 1 million cu yd of harbor silt. The program will allow deeper-draft shipping to use the port.

• **High voltage research**—Construction started last month on a $7-million super-high voltage power research center in Takeyama, Japan. The center is a joint project of nine power companies, heavy electrical manufacturers and the government. Researchers will handle up to 2.5 million volts. Among the center's equipment is a generator capable of short bursts of 2.5 million kva.

• **Peruvian project gels**—The Big Mantaro hydro project in Peru moves a step closer to realization. A British financial-industrial group has offered to construct the first stage of the 1.8-million-kw project, deemed technically and economically feasible (ENR May 18, p. 97).

• **Swiss to host wastes parley**—The second Pro Aqua International Technical Exhibition for Water and Waste Water Purification is set for September 30 to October 7, in Basle, Switzerland. There will also be a congress on problems in industrial and domestic waste waters. For details: Secretariate Pro Aqua A. G. Postfach, Basle 21.

• **More Canadian hydro**—Shawinigan Water and Power Co., Montreal, will start construction this summer on a $44-million hydro plant. The site is at Rapide des Coeurs on the St. Maurice River. Initial capacity is 125,000 kw.

• **Indian dam raising**—U. S. approval of a $58-million loan signals the start of second-stage construction on the Sharavathy hydro project in Mysore, India. Stage I work includes raising the existing dam to 188 ft, increasing powerhouse capacity to 623,000 kw and constructing 401 miles of 220-kw transmission line.

• **Italians to build Sudan dam**—G. Torno & Co., Milan, will build the Kafr El Ghirba Dam on the Atbara River in Sudan. The 11,480-ft-long dam will be 180 ft high. It is the first major dam to be built since Sudan became independent.

Motel Keeps Rooms, Cars Separate Under One Roof

Architects for a $2-million, 14-story motor hotel in downtown Columbus, Ohio, have isolated the parking, mechanical and residential units of the building in an ingenious design featuring a circular tower.

A four-story parking structure at the rear will provide direct access to elevators at each floor. An automobile access ramp will spiral around the lower portion of the tower, which will house air conditioning and other mechanical equipment. Guest rooms occupy the nine upper levels in the tower, above a swimming pool on the fifth floor. The lobby and dining room will actually extend below grade.

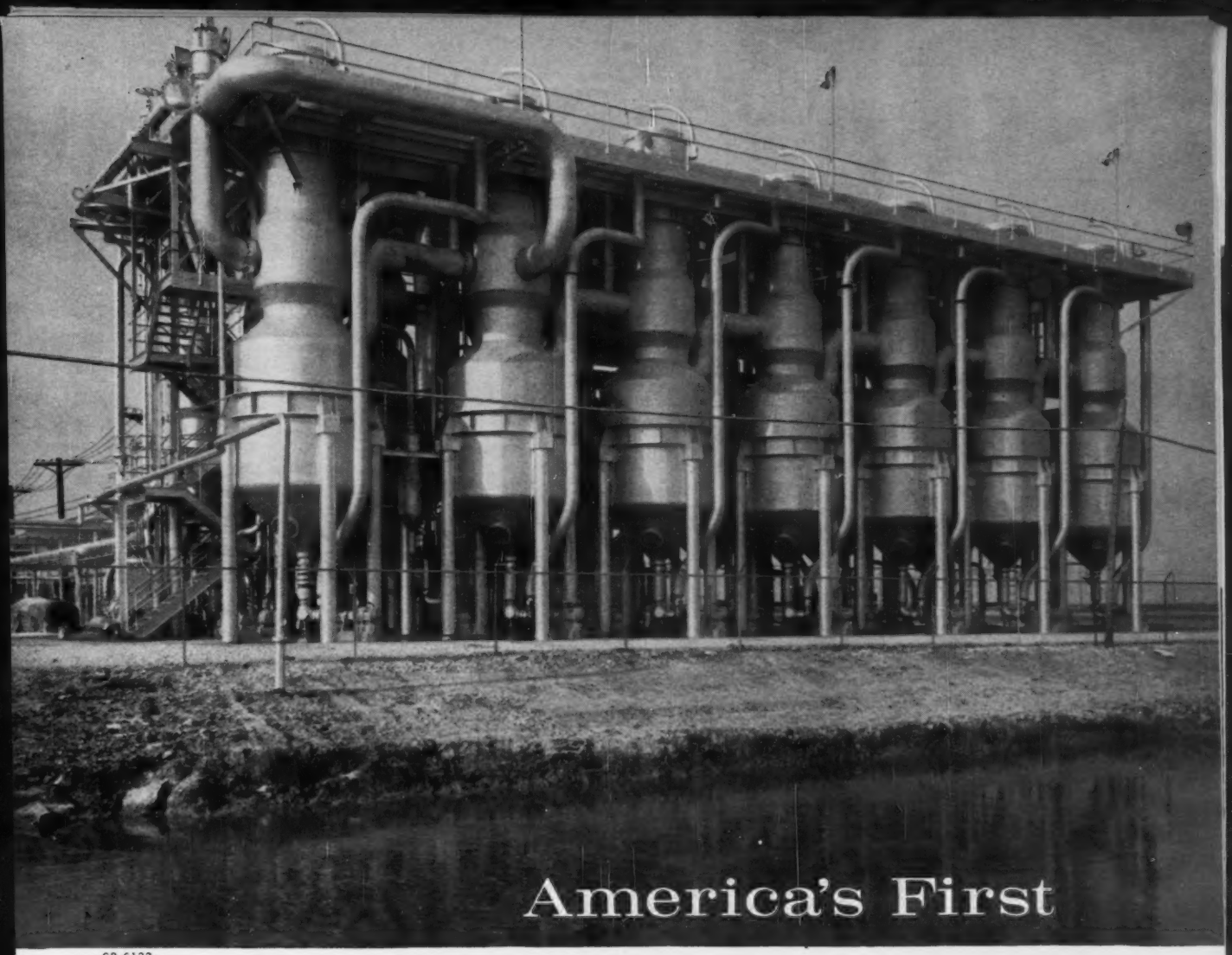
Floors of the reinforced concrete tower cantilever 16 ft radially. A ledge about 2 ft wide provides access to the glass walls for window washers. Floor framing comprises radial beams with solid slabs spanning them.

Louis F. Karlsberger & Associates are architects. Russel S. Fling is structural engineer. Both are Columbus firms.

World's Highest Lock Will Open This Year

Boat traffic on the Snake River will pass through the world's highest single-lift lock at Ice Harbor Dam, near Pasco, Wash., before the end of this year. Maximum lift of the lock is 103 ft—three feet higher than TVA's Wilson Lock in Alabama, highest existing single lift. The lock at Ice Harbor is 675 ft long and 86 ft wide.

The $135-million Corps of Engineers' power project is about 10 miles upstream from the Snake River's confluence with the Columbia River. It is scheduled for completion in December 1961. Initial capacity of the power plant will be 270,000 kw. It will eventually be doubled (ENR Dec. 27, 1956, p. 25).



America's First Experimental Seawater Conversion Plant

CB-6122

The steady decline of available fresh water may well find economical solution through this new experimental saline water conversion plant. It's America's first installation.

Built by CB&I for the Office of Saline Water, U. S. Dept. of Interior, it is capable of producing 1,000,000 gallons of fresh water daily from the salty Gulf of Mexico at Freeport, Texas. The facility is expected to produce this volume for less than $1 per thousand gallons.

Valuable operating information, including methods of combating corrosion and scale formation, will be provided for future and larger installations to follow.

CB&I completed the design, fabrication and erection of the steel structure in less than a year. This included an 8-day test run.

To learn how CB&I's extensive experience with process design, fabrication and erection in many fields can be advantageously applied to your plant problems, write to Chicago Bridge & Iron Company, 332 South Michigan Avenue, Chicago 4, Illinois. Offices and subsidiaries are located throughout the world.

CB&I **built it!**

B.F.Goodrich helps unlock Ohio River traffic jam

WITH TIRES, HOSE AND OTHER PRODUCTS, B.F.GOODRICH SPEEDS CONSTRUCTION OF NEW NAVIGATION SYSTEM

Time was when traffic was slowed by 4 separate locks in a 95-mile stretch of the Ohio River. But the Capt. Anthony Meldahl Locks and Dam will flood them. This project is part of a modern navigation system that will reduce 13 locks and dams to 3, and lockage time from 19½ hours to 1½ hours.

Groves Ventures Company of Minneapolis, Minnesota, a joint venture sponsored by S. J. Groves & Sons Co., is on the job with an army of B.F.Goodrich tires and always-available BFG tire service. Rock Service tires, for example, haul 33-ton loads of concrete from batch plant to lock forms over rock-strewn roads. No problem for these BFG giants, though. They're available in new

33 TONS OF CONCRETE leave batch plant (photo at left) bound for lock pouring area (below). Locks will be 110′ x 1200′, will require over 670-thousand cubic yards of concrete, will cost over $25-million. B.F.Goodrich Rock Service and Rock Rib tires haul concrete 16 hours a day, 6 days a week down 2 long grades into the cofferdam excavation. Roads are covered with crushed rock and gravel, and often with 6″ of water. Yet BFG tires give exceptional service, Groves Ventures reports.

B.F.GOODRICH ON-THE-JOB TIRE SERVICE keeps Groves Ventures equipment rolling on lock project near Chilo, Ohio—keeps tire costs at a minimum. The BFG Servicemobile and repair shop are manned by tire experts, whose workmanship prompts Project Manager W. J. Green to write, "B.F.Goodrich service and repair facilities have done an excellent job of covering our needs."

NO STING IN THIS STEAM HOSE, used to cure concrete at Capt. Anthony Meldahl locks. It's Burstproof hose, made of BFG-developed heat-resistant rubber with layers of braided wire reinforcement. It can't explode. Supplying Groves Ventures with hose, belting and protective clothing—as well as tires—is all part of the BFG Unified Contractor Program. Contractors benefit from lower costs and better rubber products' service with this new BFG program.

Cut Protected compound that defies tire-killing rock.

B.F.Goodrich Flex-Rite Nylon cord construction withstands double the impact of ordinary materials, resists heat blowouts and flex breaks. Result: more retreadable tires. No wonder Groves Ventures specifies BFG tires.

You'll find B.F.Goodrich hose, protective clothing and other products at work here—all part of the BFG Unified Contractor Program that helps contractors cut costs and get better service from rubber products. Call your nearby B.F.Goodrich Smileage dealer (listed under Tires in the Yellow Pages). He has the know-how to help make your next contract more profitable. *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify **B.F.Goodrich Tubeless or tube-type tires when ordering new equipment**

B.F.Goodrich

Why I Quit 'Working for the Government'

By C. R. Van Orman

I quit "working for the government" years ago. I'm happier because I did. I've tried to turn in a professional job each day ever since, **and the government is apparently willing to pay my salary every two weeks.**

Paradoxical?

No. I'm still in government employ, but I quit trying to work for an intangible employer. Before I quit, I was alternately apathetic, frustrated, left behind, starry-eyed, snubbed and possibly doomed to failure as an individual. Since I quit, I'm happy. It's simple: I now work for my boss!

How could I be "working for the government" if I wanted to?

Who gives my orders for the day? The President? Congress? The Secretary of Defense? Secretary of the Army? Or the man I call boss?

I don't really know the President or Congress, or any other upper level of so-called government authority. I know their official written rules and directives, but I wouldn't fight for these vague entities as hard as I would for a flesh-and-blood supervisor who knows me.

I know the philosophy of the fellow who thinks he is "working for the government."

(He's late)—"The government will never know it 100 years from now."

(The elevator's slow)—"The government should do something."

(His supervisor calls him in for a Performance Appraisal—Satisfactory!)—"You can't get outstanding under these silly rules."

(He is asked to help out in another section)—"It's not called for on my job sheet."

(Notified of promotion)—"Personnel standards finally got revised to recognize me . . . it's way past due."

(Overtime is needed tonight)—"Get somebody else in this salt mine; I have riders to take care of."

(A friend asks, "Whom do you work for?")—"I work for the government . . . it's for the birds."

He may be potentially good; he may have a good education. But he is not tied to a tangible boss. He works (vaguely) for the taxpayers, of whom he is one. Therefore, he feels that he is working more or less for himself, but without benefit of the usual incentives, the risks, the rewards or worries of real self-employment.

When he's promoted, he has no one person to thank, to show his personal appreciation.

When he needs to know the goals and policies of his office, all he has are a handful of pamphlets and stiffly worded directives.

When he wants personal advice, he usually has no place to go except to professionals in the Personnel Office who may not know him except through his "201 File."

To him, authority is the higher-ups, the deep-rug department, the brass, the front office. He has little or no sense of respect for genuine confidence in any of these wholly impersonal labels.

But he need never work for some Great White Father in Washington. We could recruit him on the basis of going to work for fine men who know their stuff, experienced professionals in their fields who need help and are willing to train young men.

Let's give him to his boss. There's nothing basically wrong with this term, boss. Many men are devoted to their bosses. A good boss knows them; he helps them; he rewards them; he trains them; and finally he usually has their respect.

The fellow who insists that he is "working for the government" bypasses the one man who could do him the most good—his boss.

I quit working for the government when I actually discovered my boss. I found that he was trying hard to get me a raise. I hadn't asked for it, and when I learned of this effort in my behalf, something happened.

Instantly, that man, the boss, became important to me. I wanted to know just what he wanted done and how he wanted it done. I tried to find out what he thought and how. I tried to sense how he wrote, and what he looked for in determining policy. Then his goals became mine. Of course, they were also the goals of my government, but now I could see them realistically in terms of everyday work.

Soon it became our work. It became easier to tell people where and for whom I worked, because the objectives of our office (and government) came into focus when viewed through the boss's eyes.

Next, I came to realize that he, in turn, was following a flesh-and-blood representative of government—not some vast, generalized entity, far-removed. He advanced—and he pulled me and others up with him.

Today, I feel far more a part of this government of ours than when I "worked for it."

It's been a happy, rewarding career ever since I quit "working for the government" and began to serve the government by working for my boss.

***Author Van Orman** is assistant chief of the Engineering Division, Kansas City District, Corps of Engineers. He has been with the Corp over 27 years, formerly in the Omaha District and the Missouri River Division offices. He's 57, a civil engineering graduate of Kansas University and a Tau Beta Pi.*

CLEVELAND TRENCHER REPLACES 3 MACHINES – DOUBLES PRODUCTION FOR ROAD CURBING

On the 16-inch curbing job above, a Cleveland JS-30 Trencher:

- **truck-loaded excess spoil**
- **placed required fines for final backfill**
- **sneaked past poles and trees**
- **kept traffic lanes open**
- **replaced** { **one backhoe** / **one grader** / **one front-end loader**
- **DOUBLED DAILY PRODUCTION**

Nothing digs trench like a trencher — and the Cleveland Model JS-30 fits more jobs than any trencher ever built.

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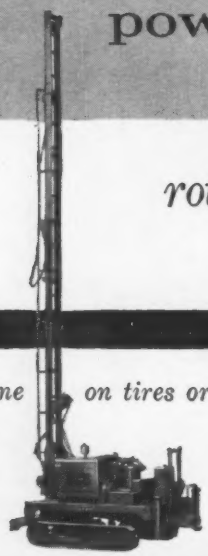
LE ROI LRD-2 for low cost, powerful rotary drilling

rotary or down-the-hole drilling
. . . gas or diesel



These rigs come on tires or tracks!

Here's a highly portable blasthole drill for drilling holes up to 4½ inches as deep as 30 feet . . . equipped for either positive-drive rotary drilling or powerful down-the-hole percussive drilling.

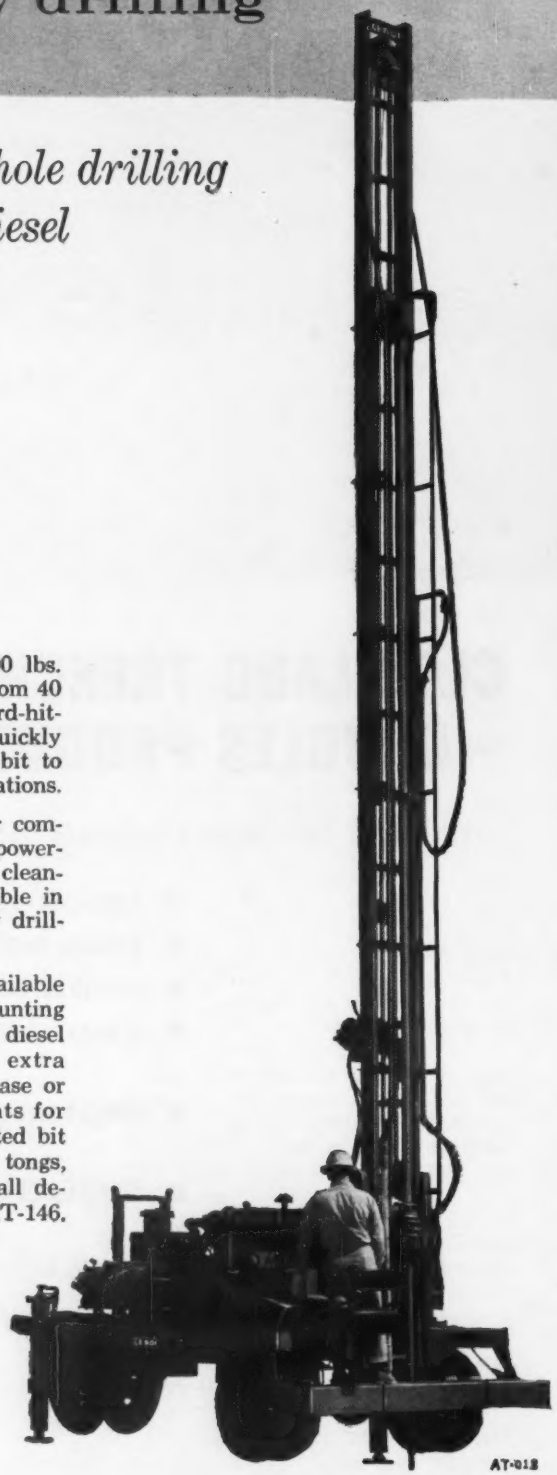
What's more, the LRD-2 is completely self-contained . . . and economically priced, too!

The entire unit is easily handled by one man. Controls are conveniently grouped at an operator's station located alongside the drilling area. The unit can be moved, leveling jacks hydraulically set, mast hydraulically raised, drill pipe and bits connected, and hole started all with a few non-fatiguing motions.

Powerful direct mechanical drive keeps the rotary table turning — won't bog down or lose torque under rough going like air or hydraulic driven units — eats through tough rock formations under 10,000 lbs. pulldown pressure at speeds from 40 to 250 rpm. If necessary, a hard-hitting down-the-hole drill can quickly be substituted for the rotary bit to drill extremely hard rock formations.

A Le Roi 25 hp two-stage air compressor provides ample air for powering the down-the-hole drill and cleaning out hole . . . or is available in single-stage where only rotary drilling is necessary.

The self-propelled LRD-2 is available either on crawler or tire mounting and with either gasoline or diesel power unit. A whole list of extra equipment is available to ease or speed drilling, including lights for night-time operation, a mounted bit grinder, air hoist, breakout tongs, water injection system, . . . all detailed in Specification Sheet AT-146. Write for your copy.



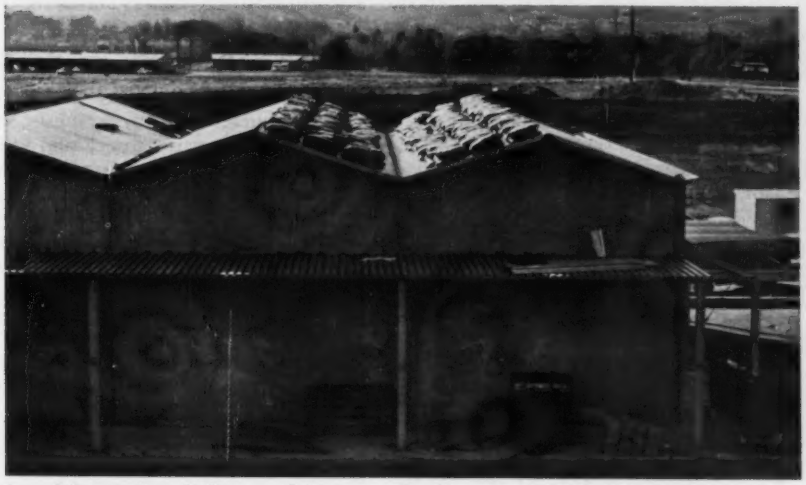
AT-018

LE ROI

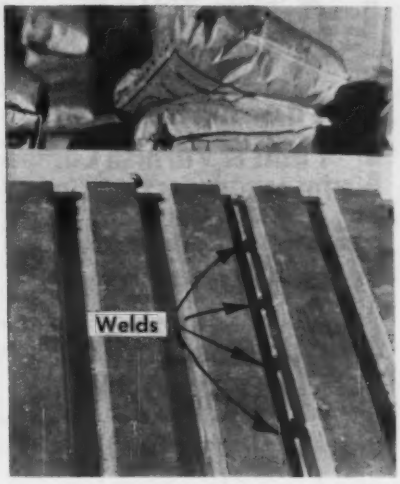
division of Westinghouse Air Brake Co.

Sidney, Ohio

Steel folded-plate roof for library stack area (arrow) offers space free of columns.



Sand bags load the roof in test of edge connection shears.



Loads test welds joining panels.

Loads Test Steel Folded-Plate Roof

By Daniel Shapiro

Designers of a steel folded-plate roof for a California library building called for a full load test after the structural elements were in place.

They specified the tests because applicable building codes or previously conducted tests do not cover high edge shears between steel roof deck units such as would be encountered in this folded-plate design. The tests, included as part of the project specifications, proved the suitability of the design and of the particular steel elements provided for the high live load shears that were anticipated.

***Daniel Shapiro** is a structural engineer with John Sardis and Associates, a San Francisco engineering firm that did structural design on the Contra Costa County Library and other important structures in northern California.*

• **Why folded plate was chosen**—For a variety of reasons, including general appearance, economy, and simplicity of construction, the designers—Corlett and Spackman, architects, and John Sardis and Associates, structural engineers, both of San Francisco—decided that the central collection or stack area should be concrete wall construction with steel roof deck. They wanted a clear span of 44 ft with no interior columns and a smooth ceiling surface with no beams.

A folded-plate design with steel roof deck appeared to be a natural solution to the problem. But although steel deck of the shape desired for this use had been tested for shear, none had been tested to prove its adequacy under the high shears anticipated under full live loading. Extrapolation of available test data and calculations indicated that with heavier welding between sheets and between sheets and border members than used in the previous tests the material was suitable for the library design.

• **Test reveals safety factor**—Rather than run tests separately to prove the suitability of the material, the designers decided that full load tests would be performed on the job as the contractor erected the folded-plate roof. Accordingly, they incorporated a test procedure into the specifications that had the roof loaded to three times design live load. This showed an over-all

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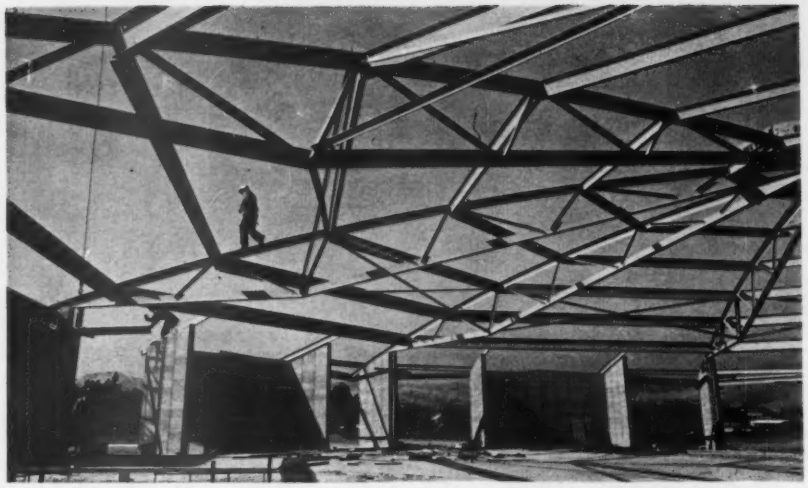

SHALLOW TRUSSES radiating from a central column form an octagonal rotunda.

safety factor of about two for dead load plus live load.

The roof deck is made up of 16-gage flat bottom sheet and 16-gage fluted top sheets. The sheets came in 2-ft widths with each unit stiffened by four 3-in.-wide by 1½-in.-deep top sheet flutes. Spot welding in the three 2-in. valleys connects the fluted top sheet and the bottom sheet.

Workmen connected adjacent steel panels by 1-in. welds at 6-in. centers. Tests proved the adequacy of these welds for the live load shears.

The roof assemblies span 10 ft between steel angle ridge and valley supports for the full 44-ft width of the structure. Two complete bays of roof deck were in place before the test. The wall of the building provided restraint for one exterior edge of these bays while temporary bracing restrained the other edge. Sand bags loaded the valley formed by the two interior panels to about 17 tons.

Wires hung from the center and quarter points of the valley provided means of measuring deflections with a level. Engineers took such measurements before and after loading the roof, again after 24 hours and finally when the sand bags had been removed. They found the 24-hour deflection at mid-span to be ¼ in. (slightly less at the quarter points) with complete recovery after unloading the roof.

Calculations made prior to the test anticipated a center deflection of 0.41 in. These calculations took account only of the loaded panels and did not account for the help given in the vertical direction by the adjacent panels. The engineers concluded that the actual deflections encountered were close enough to the theoretical to indicate that no part of the structure was overstressed. And careful inspection revealed no distress in either the deck or the welding.

R. C. Mahon Co., deck manufacturer and subcontractor, conducted the test under supervision of the structural engineer. F. P. Lathrop Co., Inc., general contractor on the job, cooperated in the test program.

This test amply demonstrates adaptability of steel roof deck material for folded plate roofs. Additional tests by deck manufacturers to establish safe shear values for various deck and welding patterns should increase economy.

The contractor assembled the deck for this library job in the field. This required shoring under the valleys and ridges until the deck units could be welded. Shop fabrication of the 44x10-ft panels could provide even more economy.

The recently completed building serves Contra Costa County, Calif., near San Francisco. Another part of the structure has a rotunda with 58-ft trusses radiating from a central column.

• **Trusses form rotunda**—The truss formed rotunda is the focal point for public access to the library. It houses a branch library for the local area and a reading room for the reference facilities of the central collection.

The octagon-shaped rotunda has a steel center support that receives eight steel trusses, 58 ft in length, spanning to masonry piers at the exterior. The curved top chords of the trusses are 8-in., 29-lb structural tees. Bottom chords are 8-in., 22.5-lb tees. Maximum depth of the trusses is 4 ft 6 in.

The eight trusses span 115 ft with only a single central support formed by an 8-in. double extra strong pipe column. The column is capped with a smaller pipe to which are welded fin plates punched with two holes. These take 1-in.-dia bolts for truss support.

Golden Gate Iron Works, Inc., of San Francisco, who fabricated and erected all the structural steel on the job, erected the steel framework in only three days.

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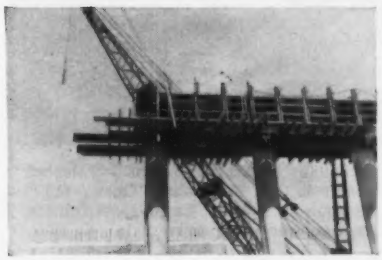
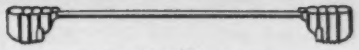
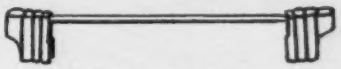




Pres-Steel Hanger
(patented)



Haunch Pres-Steel Hanger

Con-Beam Hanger

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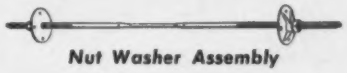
Coil Beam Saddle

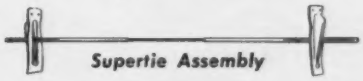
Cone-Fast Coil Tie

4-Strut Coil Tie

Tilt-Lock Assembly

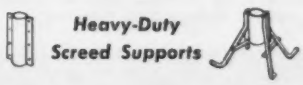


Nut Washer Assembly



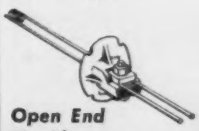
Supertie Assembly

5M & 3M Snap Ties



Heavy-Duty Screed Supports

Screed Chairs



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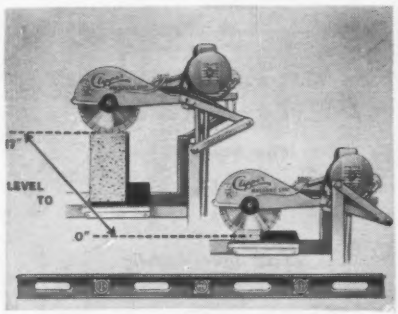

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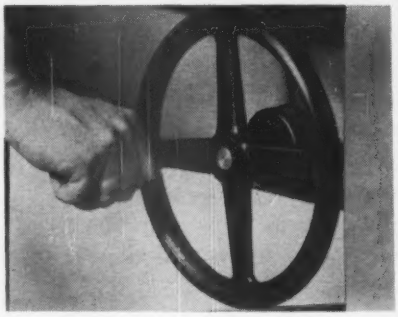

HI-LO CONTROL WHEEL—Patented. No head angle adjustments to make—no levers or knobs to pull—no slides or gears to stick or rust. Recessed to prevent damage.

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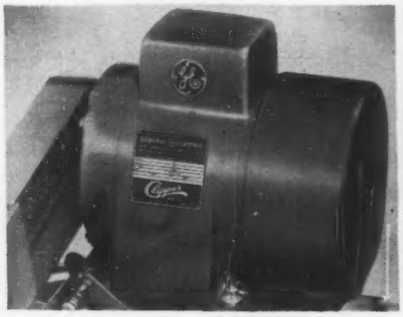

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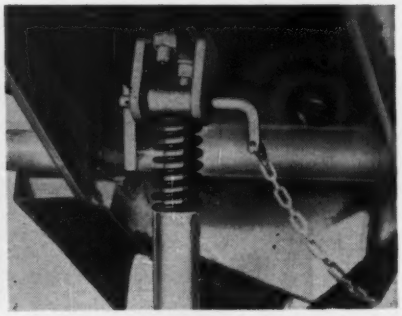

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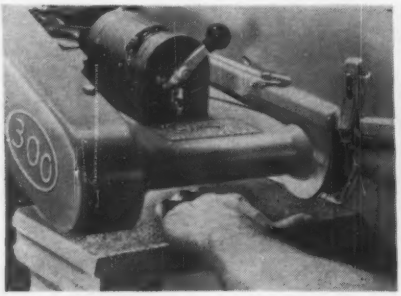
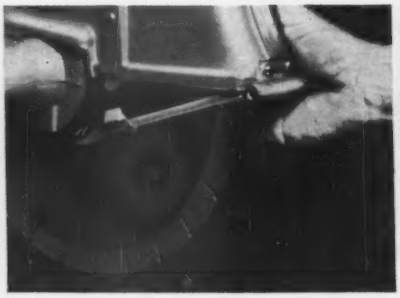
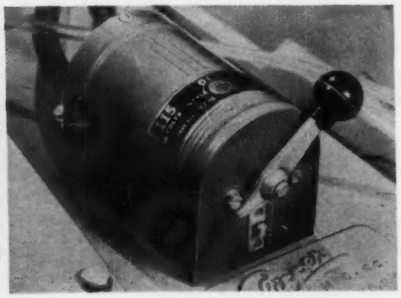


SLIM-LINE BEARING HOUSING—Cast as an integral part of the cutting head (not bolted on) to assure permanent, precision alignment. Tamper-proof, can't vibrate loose. Design permits hand clearance for full-depth cutting.



HINGE-LOK BLADE GUARD — This patented Clipper exclusive is specially engineered to eliminate excessive spraying by channelling the water flow away from the operator. Hinged for easy blade installation.



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Making the Ocean Work for You

Tampering with nature's delicate balance is part of the construction business, but when engineers pit themselves against the sea they face their most formidable adversary.

In an attempt to beat the ocean at the game of building and destroying the coastal profile of Florida's Sarasota Bay area, the Coastal Engineering Laboratory of the University of Florida is studying in advance the effect some large landfills will have on the inlets and general tidal situation in the bay.

Model under study is replica of shoreline pictured above.

• **Plotting a fill's future**—The study, under way for several months, came about when a realty company proposed to fill in the bay side of Longboat and Lido Keys—long spit-like islands that shelter mainland Sarasota from the Gulf of Mexico. Real estate developers plan on adding several thousand building lots to the leeward side of the islands by dumping more than 10 million cu yd of sand along the shores.

City and county officials in the area were apprehensive over just what effect such a large-scale land fill operation might have on beaches, navigation channels and inlets. Before starting the project, the developer's consulting engineers, Gee and Jensen, West Palm Beach, engaged the Coastal Engineering Laboratory to make the $60,000 study. The real estate firm is Arvida Realty Co., a subsidiary of Arvida Realty Corp., Boca Raton, Fla.

The reason for the official apprehension is that in the past many such land fills have been built along the Gulf Coast and in various bays and it is felt that the subsequent reduction in tidal water area has caused tidal inlets to shoal faster than before. These fills also may have aggravated erosion of beaches and shoreline.

• **Man-made tides**—Nucleus of the Sarasota study is a 50 x 120-ft model of the Sarasota Bay area that the Coastal Engineering Lab built on the university campus. An automatic tide generator simulates tides.

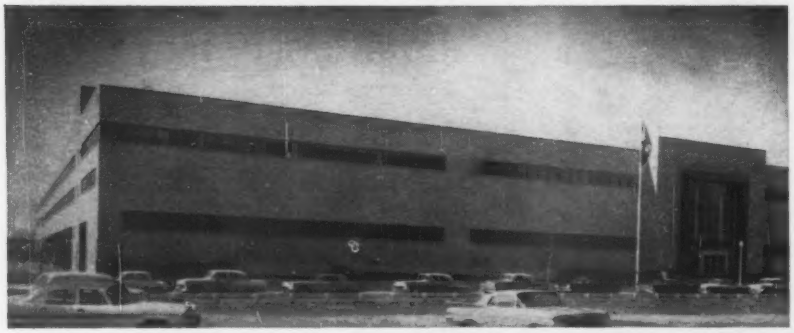
These simulated tides are logged by water level recorders placed in the model in the identical locations where recorders are spotted around the bay area. Tests show that the model comes within 5% of the actual tidal curves.

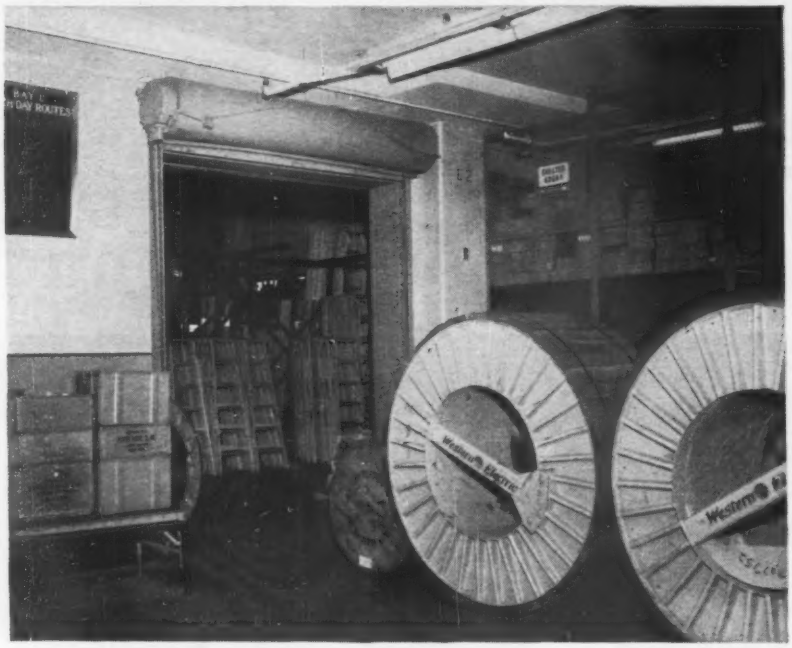
The lab model was constructed from data obtained from a 1954-55 hydrographic survey of the area by the U. S. Coast & Geodetic Survey, supplemented by more than 100 sounding lines taken by CEL. An echo depth recorder that produced a continuous record of the bottom made these soundings.

The 1 : 600 concrete model reproduces the land masses and configuration of the surrounding water areas. New Pass (pass is Gulf Coastese for inlet) separates Longboat Key and Lido Key; Sarasota Pass separates Lido Key and Siesta Key. Tidal waters from the Gulf of Mexico flow in and out of Sarasota Bay through these passes.

Frequent photographs of the model's flow patterns supplement the electronic data. Confetti thrown into the moving water makes the patterns photograph clearly. Copper pegs and small con-

THE CLIENT IS PLEASED





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crete blocks placed in the water create artificial roughness.

The Sarasota model is the fourth of its kind built at the university in a continuous study of beach erosion and inlet improvement. Although beach erosion is a universal problem in coastal areas throughout the world, it is compounded in peninsular Florida by its 1,200 miles of coastline riddled with both natural and artificial inlets.

• **Rx for ailing beaches**—The Coastal Engineering Laboratory has made recommendations to various areas in Florida with shoreline problems. The lab generally advises artificial sand nourishment for eroding beaches and sand transfer plants for improving inlets.

One of the most ambitious sand-transfer operations in the state is the $530,000 sand-pumping plant on the north jetty on the Palm Beach Inlet (ENR Aug. 7, 1958, p. 46). Started in 1958, the transfer operation is reported to be progressing satisfactorily. But results are barely visible because of the great deficit that developed on the south side of the inlet after the jetties were built in 1925. Tippetts-Abbett-McCarthy-Stratton, New York, designed the project.

At Baker's Haulover, a public beach in the North Miami Beach area, CEL recommends reshaping the inlet entrance to decrease maximum water velocities. Some 200,000 cu yd of sand have been dumped on the beach to stabilize offshore bottom.

At Boca Raton, a proposed project would extend and reshape both jetties of the inlet. The project includes installation of a sand trap above the north jetty for an artificial nourishment program for the south side of the jetties.

CEL also recommended a sand transfer plant to combat beach erosion at Fort Pierce.

Per Bruun, noted Danish expert on beach erosion and head of the Coastal Engineering Laboratory, recommends the following for Florida as a whole:

- A comprehensive material balance and littoral drift study of the state's entire shoreline.
- An artificial nourishment program supported by state and federal funds.
- A storm flood protection program assuring reconstruction and elevation of affected shore areas.
- Energy-absorbing sea walls, either revetment or other types suitable as dune slope protection.
- Low or adjustable groins in special cases.
- In certain locations, groups of groins carefully used in connection with artificial nourishment.

Mr. Bruun feels that the cost of model studies is negligible compared with the technical and economic advantages gained from their results.

Bethlehem roof bolts are being installed in this 8-mile-long water tunnel near South Berlin, Mass. A 54-in. steel strap allows each pair of bolts to work as a unit and distributes the support over a large area of rock.

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First stage: Monitors record each worker's moves on a Cincinnati housebuilding project.

Housebuilding Gets Time-Motion Study

"There have been as many changes in housebuilding techniques in the past ten years as there were in the preceding 2,000 years. And there will be more changes in the next two years than there have been in the past ten years," says R. J. Johnson, director of research and technology of the National Association of Home Builders.

"The past ten years have been a transition from craft activity to industrial activity in housebuilding. What will happen in the next two years is the application of industrial engineering techniques, which until now have been confined to factory applications. This will bring on another metamorphosis in the housebuilding industry," says Mr. Johnson.

The progress Mr. Johnson predicts will be the result of a project labeled Time and Methods Analysis Program (TAMAP), a minutely detailed application of time and motion study to housebuilding.

The aim of TAMAP is to find ways to cut cost and improve quality in housebuilding through the application of industrial engineering techniques. The project is a joint venture of the NAHB Research Institute, the Stanley Works Co., hardware and tool makers of New Britain, Conn., and Robert Schmitt, a Cleveland housebuilder.

NAHB and Stanley engineers will use Mr. Schmitt's housebuilding operations in a guinea pig role during the first part of the project. Later, they will study design and materials in homebuilding.

James Shequine, chief industrial engineer for Stanley, explained how the precepts of industrial engineering apply to housebuilding.

• Most people start work with little regard for the task set before them. The inclination is to start working without thinking about how the job might be done.

• Effort is relatively unimportant to efficient production. If you know the best method, effort drops.

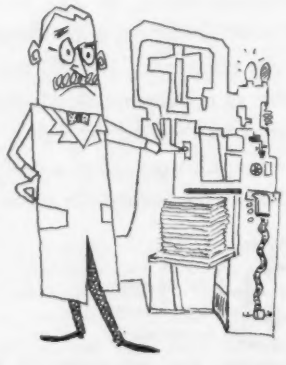
• Method is very important. We've proved that if you know the best way to do a job, the very best man and the very worst man will do that job with about the same efficiency.

• You have to understand the problem before you can find that best method.

Finding out—and hence understanding—the problems of house construction is the first stage of TAMAP. And Mr. Shequine says the problem often isn't what it first appears to be.

During 1961, TAMAP selected an

Time and motion notations . . .



tied in with material studies . . .

efficient builder, Mr. Schmitt, by today's standards, for collection of detailed data on all phases of building a house. The thinking: If TAMAP can make significant improvements in his operation, almost any builder can benefit from the lessons learned.

TAMAP data collection methods include time-lapse photography and about a quarter-million observations covering every function of building a house. Next, TAMAP will put the data together for analysis.

A progress report will come out at the end of this year. In addition, TAMAP will be the subject of a session at the Chicago NAHB convention in December.

TAMAP data will be accumulated in these ways:

Work analysts will first stop-watch time the quarter-million or so functions of building on Schmitt's houses with hundredth-minute accuracy. On a standard form, they will record time of element completion, performance and an evaluation of "normal" time for doing the task. Main concern will not be how long a task takes as how long it should take. TAMAP expects accuracy within 10%, plus or minus. (But early results are much closer than that.) Finding a standard or "normal" time for any task will be the objective in this first phase.

Analysts will make spot observations and record how many workers and what equipment are "at work," "idle," "being supervised," "walking empty," "walking laden," etc. The record will give a perspective for judging over-all management of the job. For example, if there's too much "walking" or "travel" time involved, there is poor planning somewhere along the line.

Materials analysis will measure as accurately as possible amounts ordered, delivered, used, left over, relegated to scrap and to waste. For example, if a new panel of sheet rock is cut and fitted where leftovers on hand would do the job, that's waste.

From this mass of data TAMAP will establish exact material costs, learn ways to reduce material waste. Looking forward to a future part of the program, TAMAP will also learn how and where materials might be integrated further into the design of a house. And finally, the materials analysis will seek to find correlations between materials and tools. Is the right tool being used for a certain material or task? Are proper tools available? Are they close at hand or far away because there aren't enough to go around?

The 1962 portion of TAMAP will be a methods analysis. This will cover five different areas of housebuilding:

• **Design**—From the information gained this year, TAMAP will see if there are any general design improvements possible that will reduce costs but hold quality.

• **Process**—Is there a different and better sequence in housebuilding?

• **Methods**—Within the parts of a building sequence, is each function being done the best way? This will be to a certain extent a continuation of the time study now under way.

• **Economics**—Knowing the cost of each housebuilding phase, how can these be combined for added savings?

• **Values**—What values are gained by adding costs? Is it worth $2 to add a function that costs $2? Is it worth even spending $3 on a $2 value in one place to gain even more value somewhere else?

In the end, TAMAP hopes to find the one best way to build a house.

Builder Bob Schmitt insists that this study is not an effort to "screw down" labor. "If anyone has the finger pointed at him by this study it will be me, the builder," he says. "I tell my supervisors to get over the idea that getting more work out of their men will be the criteria of success in doing a job. The real skill is not in getting above average work out of a man but in managing the over-all job efficiency.

"Unions are usually the scapegoat for all the inefficiency in the industry today. But it simply is not true. The real goat is poor management. Any good business agent for a union knows more about what goes into his particular job phase of housebuilding than the builder. It's not right. But it's that way because unions have moved into a void left by poor management."

Other builders at the Cleveland meeting said they had subcontractor organizations, did many things differently from Schmitt. But they were certain they would get a lot out of the study. One said: "We won't get the specific task information—Schmitt does a lot of things we could never get away with—but the over-all concept of applying industrial engineering techniques to housebuilding is going to be the 'make or break' factor for a lot of builders."

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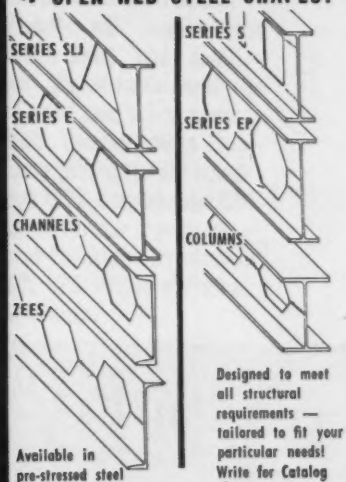

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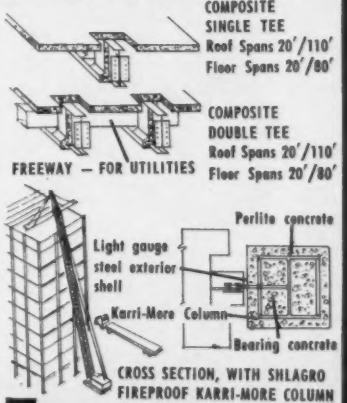

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Letter from London

New Towns

By John Shinn

After years of controversy, Britain's New Towns show every evidence of winning general acceptance.

Although the 15 communities already under development have attracted world-wide attention, they've been the subject of quite some controversy. They still are controversial but prevailing opinion today is that, on balance, they're a success.

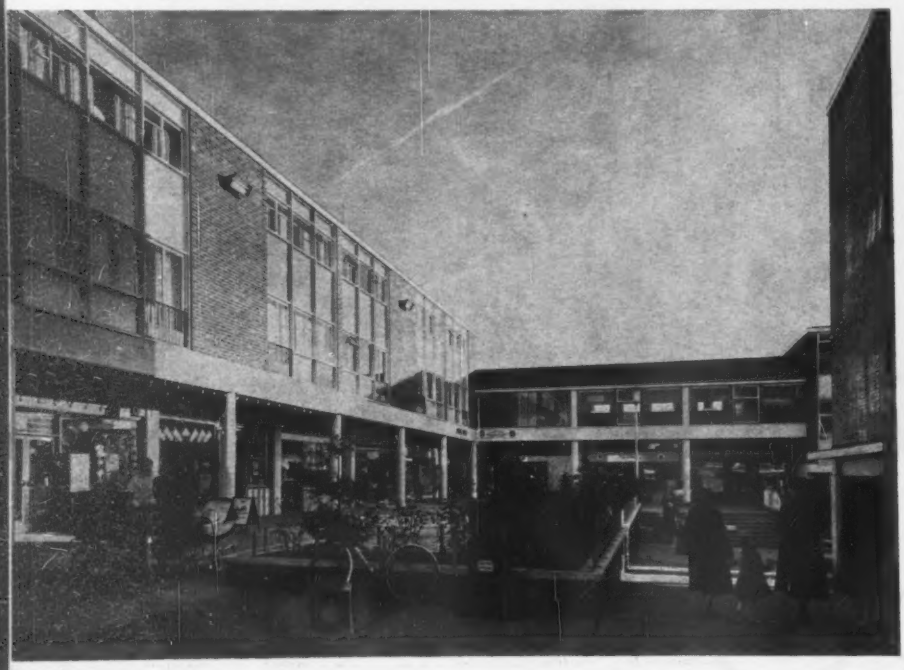
The opinion now seems firmly shared by the government, which until last year had been notably cool to the concept even since the Conservative Party took over from the Socialists in 1951.

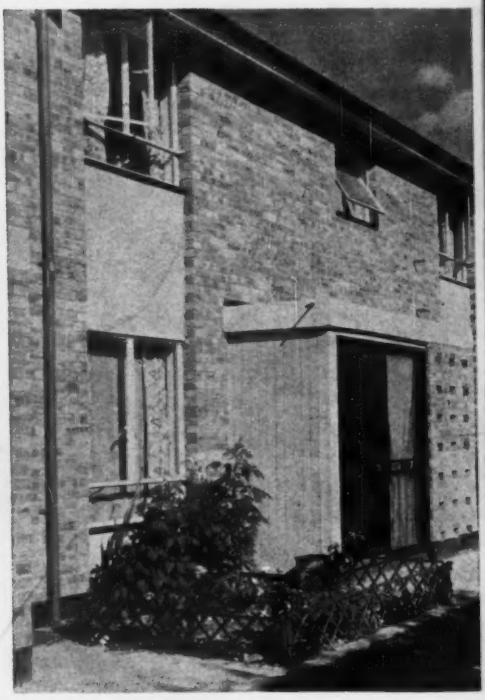
The government has not only decided to go ahead with the towns, for which overcrowded Liverpool and Birmingham have been asking for years, but also it is expected soon to announce another for Scotland.

Britain's New Towns are whole new planned communities built by the government with the principal aim of drawing off industry and population from

John Shinn served ENR in Los Angeles for several years before becoming Chief of its London Bureau.

SHOPPING CENTERS in New Towns are for pedestrians. The center above surrounds Stevenage's town square. Shops below are a part of neighborhood center in Crawley.





TYPICAL HOUSING in New Towns is a

Win Approval in Old Great Britain

urban centers. The concept grew out of a series of reports before, during and immediately after World War II on the problems of London and other congested "conurbations."

To justify themselves, the New Towns have had to prove these basic things:

- Planned, government - sponsored towns (or cities–target populations of the 15 range from 25,000 to over 100,000) could take root as organic communities.
- They could attract and hold people and industry.
- They could relieve congestion in urban centers.
- They could pay their way.

During their early years (all except the one designated in 1956 were begun between 1947 and 1950) the New Towns' fate seemed touch-and-go largely because of an off-again-on-again Exchequer tap caused by recurring economic crises.

They got off to a slow start but now–with the development stage of one, Crawley, virtually completed and others nearing completion–they can point to some impressive statistics.

Population in the New Towns (most of them built around nuclei of existing villages) has grown from 133,000 to 465,000, and sufficient industry and commerce has been attracted to support the increase. The eight London Ring towns–within 20 to 30 miles of the capital–have some 230,000 new residents, most of whom have come from or would be living in London. Population turnover is only some 5 to 6% compared to a British average nearer 10%.

Several of the New Towns are already showing a profit, and there seems little doubt that the Treasury will be repaid the loans that have financed them.

Here's how the New Towns develop:

As the first step, a "designated area" is marked off by the Ministry of Housing in consultation with existing local authorities. Because Britain is a small and crowded island, where good farmland is at a premium, the designated areas (varying between 865 and 10,250 acres) have had to be compromises based on what's desirable and what's available.

Development is carried out by a Development Corporation, headed by a Ministry-appointed board of public-spirited, usually prominent citizens serving at nominal salaries. The corporation functions much as a private developer, with some important exceptions. It can acquire land within the designated area by compulsory purchase. And it must get approval from the Ministry of Housing and the Treasury for most important decisions.

Initially, the corporation develops a master plan, subject to Ministry approval. The corporation handles most of the building within the plan, but local authorities and private enterprises do some. If necessary, the corporation is appointed water authority, sewage authority, etc., for the area.

Money for development comes from the Treasury as loans to the corporation. Borrowings are made as necessary, at current rates of interest on government loans (rates have ranged 3 to 6%), and each loan is repayable wtihin 60 years. Loans to date have totalled upwards of $700 million, out of a total of $1.1 billion so far authorized by Parliament.

With one exception–the newest town, Cumbernauld–all of the New Towns follow the same general scheme, consisting of "neighborhoods" clustered around a town center, and separated from each other by green belts. The town center has the main public buildings and the main shopping center, usually a pedestrian precinct around an open square.

Neighborhoods–varying from around 4,000 to 8,000 people–have their own schools, their own churches, some recreational facilities, and small shopping centers. Theory of the neighborhoods is that it is easier for newcomers to adapt and identify with a small, fairly compact unit than to a large, sprawling community.

Most of the housing in the New Towns consists of traditional British terraces–like duplexes, except that they may have three, four, five or more dwelling units. Great efforts have been made to vary their appearance, and to that end different architects are often used for adjacent groupings.

There are also some multi-story apartment houses, and some areas of single dwellings and duplexes.

Housing is the only part of New Town development not required to pay for itself. Like most British housing built since the war, it receives government subsidies–amounting, in the case of a house, to $90 a year ($118 in Scotland) for 60 years. Rentals on three-

three-bedroom unit with garden behind.

NEW TOWNS take pressure off cities.

INDUSTRIAL AREAS in New Towns, like this one at Crawley, offer manufacturers good sites on favorable terms.

bedroom houses run between $4.20 and $5.60 a week, exclusive of utilities, somewhat higher than equivalent housing built by public authorities elsewhere in Britain.

Industry in the New Towns stands in one or more special tracts. The corporation builds factories for sale or lease (chiefly lease, on long term) or the companies build them using ground leased from the corporation.

All of the New Towns have aimed at attracting a variety of light manufacturing industry with above-average wage rates, and for the most part they have been highly successful. The Board of Trade aided them to a considerable extent by favoring them issuance of the approvals necessary in Britain for a plant of any size.

The New Towns around London, as was originally intended, have drawn much of their industry from there. At Harlow, for instance, about three-quarters of the industry consists either of transplanted London plants or branches of London firms. The same proportion applies roughly to the eight London Ring towns together.

From the start, every effort has been made to keep the New Towns from becoming dormitory towns, since that would prevent them from becoming viable communities and would only add to the traffic snarl to and from cities. In this they've been remarkably successful. A sampling taken at the London Ring town of Crawley, for instance, showed that only 8.5% worked outside the town, only 3.62% in London.

The New Towns are planned with two target population figures—one at which development will be considered complete, after which there will be no further special efforts to attract immigration, and a second to which the town can expand by natural growth. At Corby, for instance, the development target is 40,000, and the ultimate is 55,000.

The New Towns have run into plenty of problems, some of which they have solved, some of which they're still working on. There are such snags as failure in the early residential areas to provide for rising British car ownership. And in some of the industrial tracts manufacturers are already feeling squeezed for expansion space.

The most frequent general criticism of the New Towns is that they are "prairie cities"—or not really cities at all, but groupings of low-level buildings scattered about a wide landscape, with no cohesion and with little variety. Their planners are said to be too much influenced by the "Garden City" concepts of Ebenezer Howard and other developers of private utopias in the early part of this century.

The "Garden City" concept has been stoutly defended as fitting British tastes and as a praise-worthy switch from the industrial age's over-urbanization. Planners have shown increasing ingenuity in varying the neighborhoods, relating them to each other and the town center. Several of the New Towns have been building a number of tall (to 12-story) apartment buildings. They help the skyline, but their popularity with residents has yet to be proved.

The most radical departure so far is at the newest town, Cumbernauld, near Glasgow. In part because of topography, the basic town—with 50,000 population—will consist of only one neighborhood, compactly built along a ridge two miles long by one-half mile wide. There will be two-story terraces, but also many more multi-story buildings than in the other New Towns. Shopping and civic buildings will be within the central rectangle, recreation areas and industrial sites on its periphery.

Cumbernauld also carries much further the evolving concept of separating pedestrian and vehicular traffic, which all of the New Towns have attempted to some extent. A system of radial roads and dead-end feeders to housing is kept for the most part entirely separate from a network of pedestrian footpaths. With the aid of over and under-passes, it will be possible to walk from the town center to the furthest residence without crossing any major vehicular road.

The New Towns present a number of sociological problems. They attract mostly young couples, chiefly from artisan and white collar classes. Recently the towns have tried, with some success, to attract older people. They're also trying to attract more professionals, in part by accepting more commuters, and to persuade the upper level of management of local firms to build or buy homes within the towns instead of commuting from what they consider more fashionable locations.

A major headache has been the provision of recreation and entertainment facilities. Because of Treasury insistance on revenue-producing investment, the corporations have been limited in what they could do. So have the local authorities, whose heavy expenditures for schools and other services have outpaced the rise in tax revenues. And private enterprise has been reluctant to build theaters, bars and the like until population density reached the point where they would pay.

How many New Towns will be built in the future remains to be seen. One enthusiastic member of the Town and Country Planning Association has called for an immediate program of 12 more, six of them in the London area. There's not much likelihood of such a spate. But it's reasonably certain that at least a few more will be built either under the New Towns Act or by local authorities, or both.

The New Town inhabitants, though there is plenty of grousing, seem to like what they have. For the majority of them the New Town amenities—including the open spaces and clean air—are a vast improvement over conditions in the crowded urban areas they've left behind.

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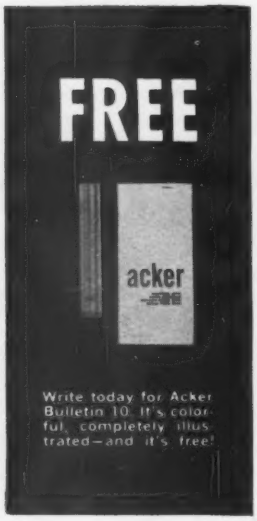

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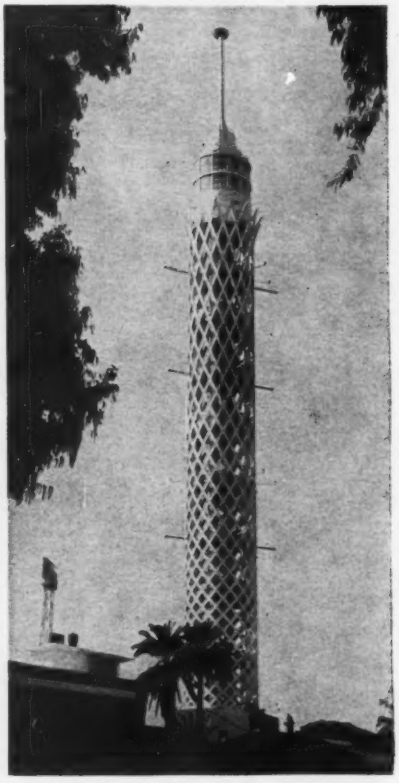

Revolving Restaurant Tops Africa's Tallest Tower

The fad for building revolving restaurants (ENR June 22, p. 154) has reached the Middle East. Diners slowly spinning atop the 540-ft Tower of Cairo can observe the Pyramids of Giza and the Sphinx, where the city meets the desert.

The open lattice tower sheathing contains 12 million pieces of brilliantly colored mosaic, harmonizing the tower with the ancient architecture of the city.

Japan Begins Cable Work On Long Suspension Span

Builders of Japan's Wakato Bridge, the longest suspension bridge in the Orient, recently began placement of guide ropes over towers for spinning suspension cables.

The 2,231-ft, $14-million bridge will link the two industrial cities of Wakamatsu and Tobata at the entrance of Dokai Bay in northern Kyushu Island.

The bridge will have a main span of 1,204 ft and a total length, including approaches, of 6,785 ft. A 131-ft clearance will permit ocean-going ships to pass under it. Its two 20-in.-dia cables will each consist of 61 wire ropes of 2.4 in. dia.

Office Building Features Two Glass Curtain Walls

The 11-story Hiram Walker-Gooderham & Worts building, now under construction in Toronto, will have two sheer glass curtain walls.

The glass walls present a nearly uniform color mass, broken only by stainless steel mullions spaced about 10 ft c-c. Aluminum grid members, porcelainized to match the glass, frame the heat-absorbing gray glass and the dark gray spandrel glass.

Toronto's atmosphere, which stains masonry and metal facades, will pose no maintenance problems for the glass walls. Window washing will suffice.

Under Toronto's building code the glass walls qualify as curtain walls and require no masonry backup. An interior metal surface backs the spandrel glass and sandwiches glass fiber insulation.

One building wall is faced completely with brick; the glass extends through the corner bay of the remaining wall, which is brick-faced elsewhere.

Cellular steel decking, with integral air ducts, enabled the designers to distribute air for heating and air conditioning without additional horizontal ducts. Total floor thickness, including concrete topping and the steel decking spanning nearly 9 ft, is only 5½ in. Structural framing is steel.

Giffels & Vallet of Canada, are architects-engineers; Eastern Construction Co., Ltd., Ontario, is the general contractor on the $1.4-million building.

Great Britain Pounds Away At Highway Modernization

Great Britain's Ministry of Transport has announced a $560-million attack for 1961 on its problem of congested and obsolete roads.

The highway project will also include the biggest bridge-building program since the middle of the 19th century. The most important job will be the first stage of the $30.8-million suspension bridge over the Severn River (ENR Mar. 30, p. 27).

The Transportation Ministry will resume at full speed highway projects slowed down by winter rains. So far the government has opened 122 miles of expressway and has 172 miles under construction or scheduled for construction. Plans for another 700 miles are in preparation.

Government and local authorities will spend $210 million on maintenance and minor improvement this year, in addition to the construction expenditure.

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Vibroflot machines compacting sand foundation to a depth of 20' for new 2-level, 5-acre parking deck between the airport's entrance ramps. Architects: Steward-Skinner Associates; Consulting Engineer: William H. Weaver; General Contractor: Fred Howland, Inc., – all of Miami, Florida.

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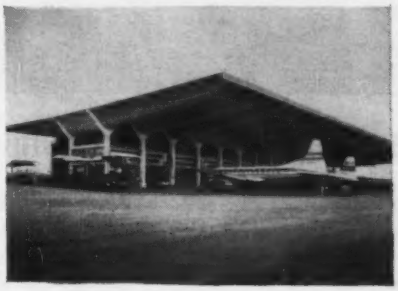

Cantilever hangar pictured at left was project No. 2 for National Airlines. Architect: Weed, Russell, Johnson and Associates, Miami; Consulting Engineer: Ammann & Whitney, New York; Soil Consultant: D. M. Burmister, New York; Contractor: Fred Howland, Inc., Miami.

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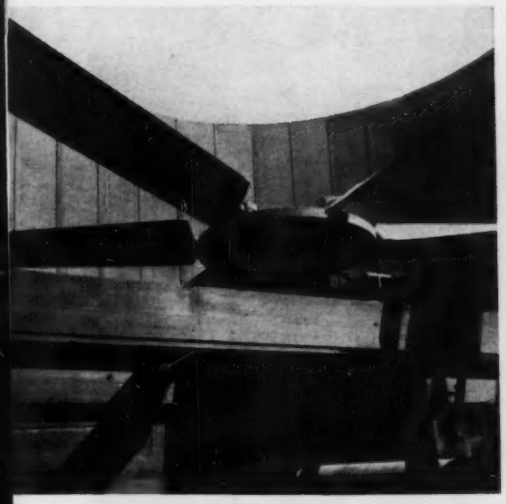

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This 22-foot diameter, six-bladed aerodynamic fan is one of four built by Koppers Metal Products Division for the water cooling tower installation at the atomic reactor testing station near Idaho Falls, Idaho. These exceedingly efficient fans help the redwood tower cool 24,000 gallons of water per minute. And in spite of the heat and moisture, the wood has lasting protection from fungus and decay because it was pressure-treated with ERDALITH® salts, an *insoluble* Koppers preservative, driven under heat and pressure deep into the cells of the wood. Check the coupon for information on pressure-treated wood and vibration-free AEROMASTER fans.

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Rex M. Whitton administers the federal-aid road program in the belief that . . .

Teamwork Turns Out Highways

Rex M. Whitton, the nation's No. 1 highway engineer, has devoted his life to the cause of better highways.

After 40 years in the Missouri State Highway Department and six months as Federal Highway Administrator, the lanky, six-foot Missourian says his goal is "simply to build highways quickly, economically and honestly." And none who know him doubt that he means it.

Rex Whitton, relaxed, slow-spoken, enjoys the challenge of his new job, but he admits its complexity. As chief engineer in Missouri he knew intimately the problems and people of one state; now, he deals with 50 states. In Missouri, he supervised a $175-million per year program; now, it's a multi-billion-dollar effort.

Few people have come to Washington to head a federal agency with more experience at the state level or more highly respected by their colleagues. Mr. Whitton is a past-president of the American Association of State Highway Officials. He is the only man ever to receive both of the highway builders' top accolades—the George S. Bartlett Award and the Thomas H. MacDonald Award.

Congressional hearings at the time of his appointment turned into testimonials to his abilty, experience and honesty of purpose.

• **Working with the states**—The Bureau of Public Roads, which he heads, has responsibility—in cooperation with the states—for the entire federal-aid highway program, including the massive Interstate system.

In the federal-aid highway program, the states initiate plans and programs, design projects and build the roads. The Bureau of Public Roads must approve every step in every federal-aid project from inception to final acceptance after construction. BPR is a zealous watchdog over the expenditure of federal funds at all levels of the program.

The Federal Highway Administrator has moved strongly to maintain and develop the federal-state relationship. He has speeded up BPR's approval of plans prepared by the states, with no lowering of standards for acceptance.

Shortly after taking office, he telephoned every state highway engineer to re-assert the federal-state partnership principle. And he met with all of BPR's regional engineers to emphasize the same point. He plans regular meetings with these key men to insure uniform interpretation of the agency's policies across the country.

"These actions," says BPR's Whitton, "are to improve—without criticism of the past—the Bureau's functioning and its relationship with the state highway departments."

• **Working with his staff**—Warm and friendly, the 62-year-old engineer seems completely relaxed in his job, where he is sometimes subjected to formidable pressures. An 8-to-5 type, he has little tendency to take either his work or his worries home with him.

Subordinates say one of his main charateristics is the delegation of responsibility and authority to those under him and to leave them alone to get the job done.

Under this pattern, his major assistants—men like Frank Turner, James

Allen, George Williams and Theodore Holmes—perhaps play stronger roles than ever before. Boss Whitton's pattern includes frequent informal conferences with top staff members as problems arise. Rarely does he schedule formal, more inclusive staff conferences.

Serious in mien and dignified without being pompous, nonetheless the administrator is quick to smile and "a wonderful man to work for," according to his subordinates. In turn, he says he has never encountered a more dedicated and capable group than those who work for the Bureau. And he's quick to show his appreciation by word and action.

• Working with roadbuilders—Mr. Whitton makes himself readily accessible to those who have a major stake in the highway program. His accessibility leads to perhaps his greatest problem, squabbles over route locations, particularly on the Interstate system, and these can create a lot of pressure.

"Problems dealing with location and right-of-way acquisition are here multiplied 50 times over those I handled in Missouri," he says. "Sometimes I feel inadequate in discussing these problems, simply because no one man can be familiar with local conditions in all the states. In Missouri, I knew every nook and cranny, had an intimate knowledge of practically every road in the state; here, that kind of knowledge is impossible."

His over-all goal, he says, remains the same, "To approve the location that will do the best job for the most people at the least cost."

A devoutly principled man, he expresses concern over the scandals uncovered by the Blatnik Committee and other investigating groups. His basic faith in the integrity of the people who run the highway program, however, remains unshaken.

Under his (and his predecessor's) administration the Bureau of Public Roads tightened inspection controls and procedures on federal-aid work. The Bureau's area engineers, who have direct responsibility for inspection, have just completed an intensive training course in the Washington headquarters, and more such efforts are planned.

The quiet-spoken engineer also voices his concern over the economic health of highway contractors. Contractors, he says, should be allowed to carry out work at a reasonable profit. The Bureau continues its efforts to gain acceptance of new methods and equipment by the state highway departments.

• His big problem: the city—Raised on a farm outside Kansas City, Rex Whitton now has a full appreciation of both

". . . I try to be accessible to those with a major stake in the highway program."

rural and urban highway problems. He strongly favors free choice of mode of transportation by the public, which means urban expressways will continue to play an important role.

"Although I believe strongly in the value of highway transportation, I am aware that it is not an end in itself," Mr. Whitton says. "It is but a means to an end. In our expanding urban areas, highways permit us to take full advantage of the flexible personal transportation that has become available only during our generation."

Speaking of large, older cities that are dependent on fixed rail mass transit systems, he has said: "The preservation and improvement of the systems, where they exist, is wise and economically sound. But mass transportation is neither the sole or the whole answer.

"We in the Bureau of Public Roads and the state highway departments are sincerely interested in reaching practical solutions to the interrelated problems of transportation and urban development. We agree that neither problem can be solved independently, and we have pioneered in the development of urban highway systems on this basis.

"We know that our major highway problems lie within the urban and metropolitan areas. They must be solved if we are to complete a coordinated, safe and efficient system of transport facilities."

• More research, road tests—A former chairman of the Highway Research Board, he stresses the value of research to highway engineers and contractors. "We expect to step up research activities in the Bureau of Public Roads," he says. "Additional studies are needed across the board in the highway field."

The amiable Missourian believes the money BPR and the states spent on the AASHO road test in Ottawa, Ill., has already been repaid by its contribution to the 210 study (highway cost allocation study). In turn, the 210 study was a potent factor in shaping the 1961 Federal-Aid Highway Act (ENR June 29, p. 20).

He sees no need for another national road test in the foreseeable future. But, he says, "satellite" test roads by individual states are needed to make the Ottawa test data applicable to local conditions. BPR is now promoting at least one such satellite test, in which three adjacent midwestern states would join forces.

Rex Whitton says he is well pleased with the 1961 highway act and its long-range provisions for financing the federal-aid system. He has said repeatedly that we must complete the Interstate system on time. The new legislation will permit just that.

The most important feature of the act is its promise for long-range, orderly development, smoothing out the peaks and valleys that have plagued past programs. As a result, Mr. Whitton hopes to eliminate reimbursement planning—by which federal-aid funds are being meted to the states on a quarterly basis—in the near future.

• For the future—What does he see ahead for highway transportation? Mounting demand for more and more modern expressways, he says, as the motoring public reaps the benefit of roads now being built. He is almost certain there will be an expansion of the Interstate system, and says a number of states are asking for permission to add to their Interstate mileage.

Technological changes—such as the automated highway that may be tested on the Interstate system (ENR June 15, p. 24)—are inevitable, he feels.

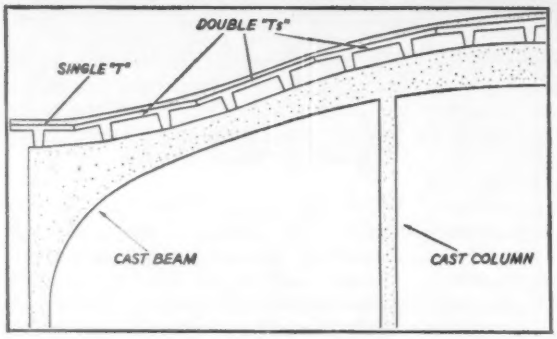
Rex Whitton has received many honors in a long and fruitful career. One of the most satisfying came this June when the University of Missouri awarded him an honorary degree of Doctor of Science. This honor was doubly sweet, since he worked his way through "Old Mizzou."

For a man who didn't want the job of Federal Highway Administrator (he turned it down flatly once, was only persuaded to take it by appeals to his strong sense of duty and public responsibility), Rex Whitton is getting on well with the job.

MORE PRESTRESSED CONCRETE NEWS:

Photo courtesy James H. Roberts

Flowing and harmonious line of barrel roof forms natural sun canopy at Community Plaza Shopping Center, Boulder, Colorado. Work has been enthusiastically received by professional men and customers alike. Architect: Hobart D. Wagener, Boulder, Colorado. Structural Engineers: Ketchum, Konkel and Hastings, Denver, Colorado. General Contractor: Craftsmen Construction Co., Denver, Colorado. **Prestressed Concrete Fabricator: Rocky Mountain Prestress, Inc., Englewood, Colorado.**



Building consists of 35,000 sq ft of Double Tee, from 35 to 50 ft in length. Drawing shows manner in which concrete arches combine with Double Tee's to form barrel roof.

This Handsome Shopping Center Roof Was Built With Standard Double Tee Sections

"I have shown this picture to other fabricators," reports Jim Synnestvedt of Roebling's Los Angeles Office, "and they *all seem enthusiastic* about the design—the primary reason being that it gave the aesthetic value of a barrel roof with a standard Double Tee product."

No wonder: *only with prestressed concrete* could you hope to achieve such soaring design with such down-to-earth economy. Prestressed standard beams give users other advantages to get enthusiastic about, as well. Speed and convenience of construction, for instance. Fireproofness. Strength. Low insurance rates. Little or no maintenance. It will *pay* you to look first at prestressed whenever you're planning a shopping center, school, office building, plant, warehouse, bridge, motel or any other structure.

Roebling has actively developed and promoted prestressed concrete construction since its beginning in America. For information on tensioning materials, on prestressing in general and for the names of fabricators near you, contact Roebling's Construction Materials Division, Trenton 2, New Jersey.

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Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

Obituaries

Bernard F. Locraft, 59, a civil engineer whose projects included work on the U. S. Capitol, the Pentagon and many other federal buildings. At the time of his death he was supervising engineering work on the New Senate Office Building, the D. C. Stadium and the Southwest Redevelopment Project. Mr. Locraft, a native of Washington, was a life member and past president of the National Capitol Section of the ASCE, the Washington Society of Engineers and the Engineers Club of Washington.

Benjamin E. Jones, 78, retired chief of the Water and Power Branch of the U. S. Geological Survey and an internationally known consultant on water power and river measurement. Mr. Jones joined the Geological Survey in 1913. From 1921 until his retirement in 1953, he made all revisions in water power estimates in this country. In 1932, he made the first geophysical investigations undertaken by the Survey for damsite selection, and supervised the surveys for Grand Coulee and other large dams. He was a past president of the National Capitol Section, ASCE.

Richard S. M. Lee, 60, head of the bridge department of Parsons, Brinkerhoff, Quade & Douglas, consulting engineers of New York City. He played a major role in designing the Marine Parkway Bridge from Brooklyn to the Rockaways, the Captree State Parkway Bridge on Long Island and the Harlem River lift bridge of the New York Central Railroad. Mr. Lee had previously been with Hardesty & Hanover; Robinson & Steinman, and Wadell & Hardesty engineering firms.

Tom Burns, 62, senior partner in the Portland, Ore., architectural firm of Burns, McNeil, Schneider, Bloodworth & Hawes. Mr. Burns designed the Portland International Airport Terminal and many other major Oregon structures. He formed the present partnership in 1946.

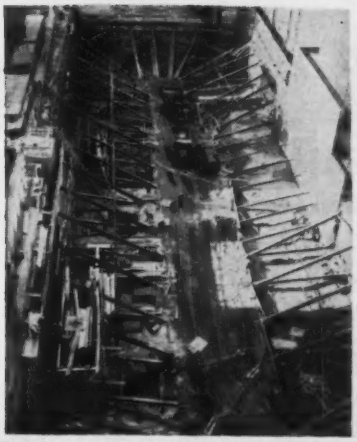
Francis M. Tompkins, 52, president of his own consulting engineering company in Washington, D. C., and a former builder in the area. He was senior vice president of Charles H. Tompkins Co., a construction firm that was sold last year to the J. A. Jones Construction Co.

J. Stanley Morehouse, 66, dean of the Engineering School of Villanova University. He joined the Villanova faculty in 1921 and became dean of engineering in 1938.

THIS?

OR

THIS?



Conventional method. Excavation and formwork are encumbered by the raker braces required to support the system of horizontal wood sheeting and soldier beams.

In new method developed by Spencer, White & Prentis, sheeting is supported from the exterior side. Cables are first grouted into sockets in bedrock. These cables are then prestressed by a jacking system and attached to the wales. The tie-back method is thus "pretested" for strength and safety.

Now, Pretest cable tie-backs support wood sheeting from exterior side. New "clutter-free" method proves successful wherever used.

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As one installation follows another—with "A-OK" results each time—the Pretest tie-back method gains increasing numbers of friends among construction men everywhere.

This broadening acceptance reflects many factors: the dependable results, the greater safety of the method and the valuable advantages it offers. You have no encumbering braces to contend with. Your free-and-clear work area permits speed and ease of operation not possible before.

Send for job studies which explain the tie-back principle—developed by foundation specialists with over 40 years experience—described by one of the leading construction editors as a "technological breakthrough."

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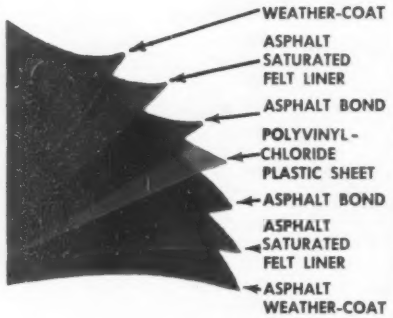
NEW
SEALTIGHT®
"MEADOWMAT"
ASPHALT-PLASTIC
LINERS



. . . for the containment of water, chemicals, brines and sewage.

"MEADOWMAT" Asphalt *armor-coated* plastic Liners combine the strength and elasticity of polyvinyl-chloride plastic with the efficiency and durability of asphalt. This new and unique mat-type liner will effectively solve many problems faced in the control of liquids. Specifically developed to meet the present need for a light-weight, low-cost durable and efficient lining material. "MEADOWMAT" Liners provide a strong, durable material with weight and substance that is easy to place without worry of punctures or tears. Easy to join and seal on-the-job...highly resistant to weathering under exposure to the elements and most acids, alkalais, salts and micro-organisms. "MEADOWMAT" Asphalt-Plastic Liners are nominally one-eight inch thick and presently available in sheets 4' wide, lengths up to 15' and weigh three-quarter pounds per square foot.

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- WATER RESERVOIRS
- CHEMICAL TREATMENT PONDS
- SEWAGE LAGOONS
- GENERAL CONTROL OF LIQUIDS

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16 KIMBALL ST. • ELGIN, ILLINOIS

Utah Highway Job Includes Seven Bridges

This $2,271,998 award for a plant mix bituminous surfaced road, including seven 20-foot span structures, between Peterson and Stoddard, Utah, went to W. W. Clyde & Co., Springville, Utah. The closely contested contract drew seven bids, the low just 1.9% under second low, Peter Kiewit Sons' Co., Idaho Falls, Id., and only 10% below the high. Merrill H. Carlson, Ogden, Utah, is the engineer for the State Road Commission.

Reinforced concrete pipe prices ranged from $6.65 a foot to a high of $8.00 for 5,610 ft of 24 in., and from $8.20 to $11.00 for 344 ft of 30 in. pipe.

Class A concrete (AE), 6 sacks per cu yd, compressive strength 3,000 psi, accounting for 10% of the projects total cost, jumped from a low of $47.28 a cu yd to a high of $77.00 for a total of 3,819 cu yd. Class B concrete (AE), 4.5 sacks per cu yd, compressive strength 2,200 psi, ranged from $33.00 to a high of $60.00 for 475 yards.

Hourly wage rates include: common labor, $2.275; bricklayer, $3.95; carpenter, $3.30.

The bidding included:

1C	W. W. Clyde & Co., Springville, Utah	$2,271,996
2	Peter Kiewit Sons' Co., Idaho Falls, Idaho	2,317,817
7	Morrison-Knudsen Co., Inc., Salt Lake City, Utah	2,539,353
EE	State Road Commission, Resident Engineer, Ogden, Utah	2,366,981

Bids: 5-2-61 Items	Unit	Quantity	Unit Prices 1C	2
Bituminous surface-tp A, plant mix	t	59,710	$2.50	$2.70
mat-tp 120-150 penetration	t	2,991	30.60	29.00
mat-tp MC-1 or MC-2	t	133	35.00	32.00
RC-1 or RC-2	t	221	38.00	33.00
RC-4	t	252	36.00	33.00
additive, commercial gr.	gal	583	2.25	1.85
Cover mat, tp C	t	1,741	4.00	4.50
tp D	t	1,150	3.50	3.00
Gravel, base course	t	131,050	0.80	0.60
surface, tp B	t	10,135	0.80	0.80
tp C	t	12,900	0.80	0.85
P cmt, treated base course	t	93,800	1.25	1.50
tp 1	sack	40,000	1.15	1.20
Exc, uncl roadway	cy	2,236,000	0.235	0.23
Overhaul, cl A	stay	16,212,250	0.01	0.0075
cl B	ymi	859,250	0.10	0.10
Rolling, vibratory roller	hr	9,593	3.00	10.50
tamping roller	hr	7,170	9.00	11.00
pneumatic tired or power roller	hr	533	10.00	9.00
Roller, pneumatic tired-50 ton	hr	250	10.00	18.00
Watering	Mgal	58,085	0.50	0.50
RCP, 24"	lf	5,610	7.10	8.00
30"	lf	344	9.80	10.00
36"	lf	506	13.40	14.00
48"	lf	218	20.80	20.00
60"	lf	168	33.00	32.00
24", cl IV	lf	832	7.70	9.00
48", cl IV	lf	220	24.00	25.00
CMP, 12"	lf	1,966	3.50	4.00
36", 8 ga, jacked under railroad	lf	350	80.00	90.00
12 ga	lf	310	13.00	14.00
60", 10 ga	lf	704	29.00	30.00
18"	lf	190	4.20	5.00
Reinf conc, end sections 24"	ea	145	80.00	75.00
30"	ea	6	106.00	105.00
36"	ea	8	150.00	145.00
48"	ea	6	225.00	225.00
End sections, met, for 12"CMP	ea	83	24.00	25.00
18"CMP	ea	1	36.00	35.00
36"CMP	ea	1	130.00	125.00
Drop inlets, median, tp C	ea	26	70.00	60.00
Topsoil	cy	27,500	0.60	0.50
Exc, for str uncl	cy	6,150	$1.50	$3.00
small ditch	cy	5,000	0.75	1.00
Ditches, surface	lf	17,000	0.10	0.30
Clear & grub	ac	26	200.00	250.00
Tamping, mech	hr	760	8.00	10.00
Conc, AE, cl A	cy	635	60.00	59.00
cl B	cy	475	47.00	52.00
Steel, reinf	lb	101,500	0.12	0.14
str	lb	16,700	0.195	0.22
Barricades, maintenance turn around	ea	2	100.00	50.00
Conc curb, tp 1-F	lf	1,200	1.50	1.70
Riprap, loose	cy	80	5.00	6.00
Guard rail, deep beam hwy, conc posts	lf	20,150	2.65	2.70
Fence, right-of-way, tp B, met posts	lf	83,650	0.37	0.37
Gates, 10'	ea	10	50.00	40.00
Markers, right-of-way	ea	160	8.00	10.00
F A P	ea	1	35.00	25.00
Flagging	hr	500	3.50	3.40
Furnish, water equipment	ea	1	30,000	5,000
construction signs	ea	1	1,500	3,000

Steel Beam Structures
Weber River Bridge

Exc, for str uncl	cy	450	4.00	5.00
Conc, AE, cl A	cy	395	59.00	59.00
Steel, reinf	lb	63,841	0.12	0.13
str	lb	57,385	0.21	0.19
Handrail, met, double rail	lf	186	8.25	9.00

Stoddard Underpass

Exc, for str uncl	cy	400	3.00	4.00
Conc, AE, cl A	cy	617	66.00	59.00
Steel, reinf	lb	129,632	0.12	0.13
str, specialty item	lb	259,600	0.21	0.20
Handrail, met, single rail	lf	674	7.25	9.00

Prestressed Concrete Structures
Union Pacific RR Overpass, Peterson

Exc, for str uncl	cy	215	3.00	5.00
Conc, AE, cl A	cy	332	67.00	58.00
Steel, reinf	lb	50,490	0.12	0.13
Conc beam, prestressed, tp II, specialty item, 36"x 51'	ea	15	870.00	750.00
Handrail, met, double rail	lf	352	8.25	10.00
Piles, other than timber	lf	715	7.00	6.50
Pile driving equip, furnish	ea	1	500.00	900.00

Peterson Overpass, South Bound

Exc, for str uncl	cy	280	3.00	3.00
Conc, AE, cl A	cy	352	65.00	58.00
Steel, reinf	lb	57,710	0.12	0.13
Handrail, met, single rail	lf	290	7.25	9.00
Conc beams, prestressed, tp II, specialty item, 36"x43'	ea	12	750.00	750.00
36"x37'	ea	6	640.00	750.00
Piles, other than timber	lf	600	7.00	6.50
Pile driving equip, furnish	ea	1	500.00	900.00

Peterson Overpass, North Bound

Exc, for str, uncl	cy	280	3.00	3.00
Conc, AE, cl A	cy	336	65.00	58.00
Steel, reinf	lb	54,901	0.12	0.13
Handrail, met, single rail	lf	266	7.25	9.00
Conc beams, prestressed, tp I, specialty item, 36" x 37'	ea	18	635.00	750.00
Piles, other than timber	lf	550	7.00	6.50
Pile driving equip, furnish	ea	1	500.00	900.00

3-Span Continuous Slab Structures
Dual Farm Road Overpass

Exc, for str, uncl	cy	450	3.00	3.50
Conc, AE, cl A	cy	581	55.50	57.00
Steel, reinf	lb	139,981	0.12	0.13
str	lb	5,094	0.29	0.25
Guard rail, deep beam hwy	lf	314	4.00	4.50

Dual Farm Road Overpass

Exc, for str, uncl	cy	250	3.00	3.50
Conc, AE, cl A	cy	571	55.50	57.00
Steel, reinf	lb	138,186	0.12	0.13
str	lb	5,094	0.29	0.25
Guard rail, deep beam hwy	lf	314	4.00	4.50

Starting date: about 6/1/61
Completion time: 325 working days

ENR Construction Cost Index (1913=100) 20-cities' average —847.32

Materials Prices

Monthly Market Quotations By ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, July 20; Next, Aug. 24.
- Wage Rates, Building Board Insulation: Last, June 29; Next, Aug. 3.
- Iron & Steel Products, Pipe: Last, July 13; Next, Aug. 17.
- Cement, Aggregate, Ready Mixed Concrete, Asphalt: Last, July 6; Next, Aug. 10

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
STRUCTURAL CLAY TILE																							
partition-scored																							
3x12x12 in.	M	$154.95pe	$217.00	$135.00pss	$232.00†	$137.00ll	$179.00mmjvv	$205.00ff	$162.00	$170.00	$257.00	$158.00 r	$218.00pe	$178.00	$236.00wwh	$263.00ss	$200.00t	$180.00mmpp	$156.85*	$235.00pt	$168.78Ruqoo	$169.00rr
4x12x12 in.	"	154.95pkke	231.00	152.00pss	248.00†mm	149.00ll	190.00mmjvv	219.00ff	162.00	185.00	274.00	158.00 r	225.00pe	178.00	315.00wwh	281.00ss	213.00t	199.00pp	177.10*	270.00pt	180.93auqoo	185.50rr
8x12x12 in.	"	309.90pe	434.00	.....	463.25†mm	280.00ll	355.00jddmm	410.00	318.75	310.00	514.00	312.00 r	452.00pe	371.25	378.00wwch	527.00ssxx	400.00t	380.00pp	235.30dd	490.00pt	325.00ausqoo	360.00rr
Load Bearing—Scored																							
8x12x12 in.	"	387.40pe	491.00	303.00p	556.00†mm	.....	390.00jmmvv	465.00ff	387.75	310.00	582.00	312.00 r	225.00pwe	371.25	384.00wwhn	597.00ss	453.00t	410.00pp	159.40qq	265.00pwt	220.00qoo	28L.50rr
10x12x12 in.	"	.....	602.00	376.00p	.....	.....	422.00jmmvv	.....	472.50	390.00	767.00	400.00 r	.....	.....	.....	.....	607.00t	440.00pp	.....	.....	400.00qoo	405.00rr
12x12x12 in.	"	.....	690.00	465.00p	.....	.....	500.00jmmvv	709.00ff	385.00	442.00	876.00	500.00 r	.....	.....	.....	.....	693.00t	621.50pp	.....	.....	.....	506.00
BRICK, common backing	M	33.25uu	36.00	27.00†	43.50p	32.00	50.00jk	44.00tt	32.00	35.00xx	53.50pmm	34.00	$42.00uu	49.50vpe	42.00	46.00p	40.00mm	42.00t	44.00mmpp	43.00*	57.00t	48.25bll	25.00rr
Straight hard	"	33.25uu	41.00	38.00,,	58.00p	34.00	49.00jk	48.00ggtt	53.00	54.00	54.00pmm	34.00	44.00	58.00ype	55.00	.....	45.00mm	40.00t	45.50pp	43.00*	71.00t	56.30bll	60.00rr
LIME, in paper, Hyd. fin.	M	42.50hh	35.80	38.28mm	42.00§	1.00aall	29.20jmm	32.75ptt	38.36	48.00p	38.00mm	36.26	38.00nnll	50.00bbe	48.00p	40.00p	40.00mmp	30.00t	1.00aapp	29.24	52.00bbt	39.00	34.00mm
" " ' Com hyd.	"	35.50hh	23.40	20.87mm	34.00§	0.90alaa	29.20jmm	28.00ptt	23.32	44.00p	30.00mm	34.26	38.00nnll	40.00bbe	32.00p	38.00p	24.50	26.00t	0.80aapp	29.24	38.00bbt	22.00	36.40mm
" " ' pulverized	"		.....	26.33gmm	.....	.....	29.20jmm	.....	26.00	46.00p	40.00mm	29.76	39.00nnll	52.00bbde	....	.....	27.50	34.00t	1.35xaapp	31.74	1.30mbbt	13.25	34.75mm

*§ F.o.b. yard. **F.o.b. plant Stockton. *† F.o.b. yard Roxbury. *a Smooth. *b $4.50 del. *c 8 x 12 x 12 in.-6 cell. *d Pulverized hot. *e less 5% disc., 10th. *f 8 x 8 x 12. *g Lumps, $26.72. *h F.o.b. trucks, job site N.Y.C. *i 60 lb sacks. *j Truck load or over. *k $1.00 discount per M, 10 days. *m Per bb. 180 lb. processed. *n 7¾ x 7¾ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincia. and Municipal tax extra (6%). *r Not used: earthquake danger. *s 8 x 16 x 12. *t less 2% disc., cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12. *x dumped. *y Chi common. *z Pebble; 80 lb sack. *aa 50 lb sack. *bb LCL. *dd 6 x 12 x 12. *ff 80% common. *gg Smooth. *hh less 25¢ disc., cash. *ii F.o.b. plant. *jj rough: smooth; $40. *kk 3½ x 11½ x 11½. *ll less 2% disc. 10th. *mm less 2% 10 days. *nn F.o.b., L. A. *oo less 2%, 30 days. *pp add 2% sales tax. *qq 8 x 5½ x 11½. *rr 2½% disc., 10 days. *ss 5% disc., 10 days. *tt less 2% disc., 15th. *uu less 50¢/M, 10 days. *vv 4000 pcs. and over. *ww Now manufactured in perodic instead of tunnel kiln.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis K	San Francisco	Seattle	Montreal	Toronto
LEAD, red, dry	CWT	$14.75/15.10ggJ	$17.50pp	$26.00†J	$24.95†oomm	$15.25rjqqpp	$15.25†JO	$25.65†	$22.50	$23.85n	$15.95r	$33.15ggool	$16.25yy	$16.25N	$23.00Jpp	$14.75ooO	$14.75mmO	$21.50mggJ	$25.65†m	$26.70mm	$13.35HO	$19.45O	$13.95
White, in oil	"	24.00ggJ	24.00	29.00†J	26.90†mmm	24.00†J	24.00†J	26.90†	23.50M	24.00	24.00rr	28.65	22.00	21.50kk	24.00J	29.75	19.00mm	24.00J	26.90	26.90mm	24.00H	26.00wtt	20.85
READY-MIXED PAINT																							
Graphite b	gal	....	3.00	3.90J	.....	.....	.....	3.31ggP	.....	3.70	....mm	3.99	3.30	.....	.....	.....	3.35mm	2.20#EJ	.....	3.20mm	.....	5.52Dfft	5.15J
Aluminum	"	4.10	4.40	3.40J	.....	.....	.....	3.63zzgg	3.25B	5.10	....mm	3.43	4.50n	.....	.....	.....	3.90mm	2.25#FJ	.....	4.30mm	4.19ccffJ	6.55xff	6.18J
Ferric Oxide	"		3.50	.....	.....	.....	.....	4.25qgg	.....	.....	....mm	3.01	4.20n	.....	.....	.....	3.65mm	2.25#GJ	.....	3.50mm	.....	5.10kfft	5.95J
ROOFING SUPPLIES	square	3.15kk	3.06	2.95†mm	3.55q	3.45ukk	2.99mm	2.85q	3.00u	2.94	2.85mm	3.21mm	3.40nkk	2.85kk	$2.78	2.99xx	.....	2.90sH	2.99iismm	2.87mm	3.70ccH	5.40	3.50
Rolls, slate surf	CWT	2.30kk	3.67	2.17ii†mm	2.60q	2.75okk	2.19mm	2.10o	3.00o	2.25o	2.10ommll	2.68omm	2.40njkk	2.10hikk	1.98	2.19xxo	2.65	2.15sH	2.19hhK	1.72aaiimm	3.06hccH	4.65f	2.40aae
Asphalt felt	"		4.04	3.17ii†mm	3.04q	3.15okk	2.64omm	2.55o	3.00o	2.80o	2.55ommll	2.68omm	.....	2.55bikk	2.85	2.64o	2.55	2.15H	2.64hhK	2.59mm	.....	4.65f	2.40o
Asphalt coating	gal.	0.72kk	0.50	0.76ffmm	0.55q	48.00bbkk	0.56ymm	0.41y	0.47O	0.50ffl	0.56ffmm	0.59y	0.75oykk	0.52ikk	0.68	0.52s	0.74	0.56H	0.58yK	0.46jj	0.59cc	1.60	0.70j
Tar pitch	ton		54.00	48.00eemm	60.00q	57.70†kk	57.96Hmm	49.00gg	66.00hh	50.00	49.00mm	.....	s.....	50.00rkk	45.50	49.00*	49.00	55.00H	57.60K	54.00	.....	4.40uu	50.00A

*† Delivered. * Note: Red lead in oil 50% higher than white lead in oil. **' Aver. wt. approx. 425 to 550 lb drums. *a Red lead prices change frequently due to pig lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e Per 108 sf roll. *f Per 432 sq ft. *g F.o.b. yard Roxbury. *h Per roll, 65 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers. *k Over 80% ferric oxide. *l Not used. *m 100 lb keg. *n F.o.b. city. *o Per 60 lb roll. *p 6-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *x Ready-mixed. *y 55-gal container. *z Drums. *aa 15 lb. *bb Roofers coating and cement. *cc LCL, truck delivery. *ee Asphalt pitch in 100 lb package. *ff 5-ga drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per 324 sf roll. *jj Asbestos roof coating. *kk less 2% disc., 10th. *mm less 2% disc., 10 days. *oo 100 lb bbls. *pp 50 or 100 lb bags. *qq 500 lbs or more. *rr F.o.b. plant, Detroit. *ss 50 lb bbls. *tt 25 lb kegs. *uu 250 lb bbls. *xx Sept.: Rolls revised to $2.75, Asph. Felt revised to 1.71. *yy Sept. revised to $12.00. *zz Sept. revised to $2.80. *A 400 lb barrels. *B ASTM Spec. D962-49. *C 95%. *D Std. black. */ Milit. spec.: *E TTP27; *F TTY81; *G TTP31. *H less 2% disc., cash. *i Per 100 lb. *J less 1% disc., 10 days. *K add 2% sales tax. *L CL. *M 1 ton or more. *N under 500 lbs, add $1. *O 50 lb. bag.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis uu	San Francisco	Seattle	Montreal	Toronto
PLASTER, neat	ton	$33.00ss	$24.00	$37.00ss	$26.00	$1.45bbtt	$24.95*ss	$29.00*ss	$32.80	$29.00	$28.00ss	$30.00	$28.00tt	$36.00F	$34.00	$27.00	$27.25	$30.00nn	$30.00	$29.50ss	$42.40nn	$22.60h	$0.70bb
gauging	"	45.00ss	35.70	43.00ss	30.00	1.45bbtt	24.95*	45.00N	35.60	29.00	28.00ss	35.00	29.00tt	36.00F	42.00	35.00	33.00ss	31.00nn	42.00	30.50ss	45.60nn	35.60h	1.25bb
VERMICULITE																							
Home insul. pellets	4 cf bag	1.65ss	0.95	1.55ss	1.40	1.55	1.75*ss	1.39ss	1.05	1.63	1.27ss	1.24E	1.25	1.65tt	1.38P	1.35	1.40ss	1.35nn	1.50	1.38ss	1.55nn	1.25h	1.47bb
plaster agg.	"	1.65ss	....	1.55ss	1.40	1.60	1.75*ss	1.34ss	1.21	1.40	1.31ss	1.26E	1.20ktt	1.80F	1.36P	1.38	1.25ss	1.30nn	1.60	1.38ss	1.35knn	1.40h	1.43bb
concrete agg. treated	"	1.85ss	....	1.60ss	1.40	1.60	1.85*ss	1.45ss	1.37	1.50l	1.40ss	1.34E	1.45	1.95Fl	1.42P	1.50	1.45ss	1.40mm	1.65	1.50ss	1.85inn	1.60h	1.66bb
PERLITE, plaster agg.	"	1.65ss	1.15	1.27ss	1.55ss	1.60	1.75ss	1.45ss	1.21	1.50ss	1.45kii	1.26	1.16	1.40S	1.15P	1.45	1.05ss	1.40nn	1.50	1.38oss	1.50k	1.15v	1.14Q
concrete agg. untreat	"	1.65ss	1.55	1.27ssl	1.55ss	1.60	1.75ss	1.45ss	1.32	1.60ss	1.50kii	.....	1.26	1.50S	1.25P	1.40	1.05qqss	1.40nn	1.60	1.58oss	.....	1.15v	.....
BUILDING SHEET																							
Alum. flat, .100"	lb	0.469noo	0.462	0.459M	0.474	0.564x	0.469	0.459aa	0.469	0.479	0.475a	0.469	0.459	0.469	0.469	0.489aT	0.479	0.475	0.499	0.575	0.50D	43.95AH	0.4375
corr. roof, .032"	sheet	9.67nY	0.451r	9.66K	25.07AAp	33.43p	9.35	25.07p	0.484r	10.89	10.35a	26.74ggyyp	8.772Z	10.09	33.43	0.2507aXAA	8.86	10.39	9.18	10.83	10.75D	12.10H	26.00ap
Stainless steel, 20 ga	CWT	61.25nxx	63.00	64.50K	62.66ddxx	61.40ee	61.00xx	58.50ooxx	64.09	65.32gg	63.00axx*	67.50E	60.11	63.61GR	59.19Y	59.21a	61.96	63.00	63.39Kmmgg	65.00K	54.02D	65.75H	73.74
28ga	"	71.25nxx	71.25	73.00K	72.67dd	71.25ee	71.25xx	68.00ooxx	72.34	73.57gg	71.25axx*	76.25E	69.61	69.61ffG	68.69Y	68.72	71.96	74.50pp	71.64ygg	77.25K	73.27D	.....	86.52

*‡ truckiots, delivered *† fob warehouse. **.ob city. *a delivered. *b ½" O.D. *c ⅝" O.D. *d per sf. *e 34" x 80" sheet. *f per 100 ft. *g 5 tons & up: cold roll, anneal & pickled 2B finish. *h incl. Federal tax. *i add 25¢ for pint of additive. *j 1100 & 3003 alloy, mill finish. *k bag of 3 cu ft. * treated with air entraining agent. *m 2-10M ft. *n fob mill fr equalized with nearest stocking competitor. *o 250 sacks or more. *p 100 sf ft. *r per lb. *s 30 lb bag. *t 36" x 108";-10.81 lb/sh; 48" x 144"; 21.7 lb/sh. *u 19.31 lb/sh *v fob plant. *w 48 x 144" *x 0.11"th. *y 27 gauge. *aa 16M lb & up. *bb Per 50 lb bag. *dd add $1.00 cwt boxing. *ee 5 tons & up. *gg add $2/cwt boxing; $0.75/cwt on skids. *hh Theoretical wt for 48" x 96"; 60.4-lb per sh. *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt; 19.7-lb per sh. *nn 2% cash. *oo skid packed. *pp type 304. *qq Philadelphia and suburbs. *rr less 2% disc. 15 days. *ss less 2% disc. 10 days. *tt less 2% disc. 10th. *uu add 2% sales tax. *vv Type N. *xx less ½% disc. 10 days. *yy .021 ga. *zz .061" th. *A Per 100 lb. *C 15M lb. *D less ½% for cash. *E Quantity differential. *F less 5% disc. 10th. *G less ½% disc. 10th. *H Fed. tax exempt. *K less ½%, 10 days. *L 5% disc. 30 days. *M 3003: .452 for 1100. *N less 2%, 15th mo. *O less $2, cash & carry. *P less 2%, 15 days. *Q per ton. *R revised. *S add .10/bag under 200 bags. *T 5000# quantity on 4000# skids. *U 30 Msf quantity; $0.245 in 10 Msf quantity. *X per sq ft. *Y per sheet. *Z 6,000 lb or over. *AA 30,000 sf or over.

Bid Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened July 18, ROAD,
Berke-Moore Co., Inc., 8 Newbury St., Boston, Mass., LB **$3,530,931,** est. $3,354,106, widen section Rte. 128, Proj. U-272(53) incl. five bridges, Lexington, CD 6/23/61.

BUILDINGS—LB & CA

▲ **George F. Driscoll Co.,** 41 East 42 St., New York, N. Y., CA Approx. **$3,000,000,** Charlesbank APARTMENTS, Huntington Ave. and St. Alphonsus St., BOSTON, MASS. The Beacon Redevelopment Corp., 31 Milk St., Boston, Mass. BA 6/27. CD 6/5/61.

▲ **Curtis L. Ivey, Inc.,** 140 E. Putman Ave., Greenwich, Conn., Owner Builds, **$4,200,000,** 70 HOUSES No. Sylvan Rd., WESTPORT, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **Pa., Phila.**—BA 8/29—Dpt. Procurement, City Hall Annex, Bid No. 2810, Work Number S-2842-F, Wakeling Street Relief SEWER in Wissinoming Park (on line of Vankirk St.) from Charles St. to Frankford Ave. and in right-of-way in North Cedar Hill Cemetery from Frankford to Bustleton Aves. and Benner St. intersection; Benner St. from Bustleton Ave. to Oakland St., 13 ft. diam. conc. sewer in tunnel, 3,380 lin. ft.; 12 ft. 3 in. diam. conc. sewer in tunnel, 790 lin. ft., for Water Dpt. CD 11/8/58.

BUILDINGS—BA

▲ **N. Y., Locust Valley**—BA 8/3—Bd. Educ. Central School Dist. No. 8, Horse Hollow Rd., JUNIOR-SENIOR HIGH SCHOOL. $4,397,500. Eggers & Higgins, 100 E. 42 St., New York, archts. Eipel Engineering, 101 Park Ave., New York, Zone 17, struct. engrs. Sears & Kopf, 45 W. 45 St., New York, Zone 36, mech. engrs. CD 12/13/60.

▲† **Pa., Phila.**—BA 8/3—Dist. P. Wks. Office, 4th Naval Dist., 400 units CAPEHART HOUSING, Naval Base, IFB-30891-61B, $6,400,000. Bellante & Clauss, Suburban Station Bldg., archts. CD 7/12/61.

▲ **N. Y., New York**—BA 8/9—Dpt. P. Wks., Rm. 1800L, Municipal Bldg., New York, Zone 7, Contr. 1, general constr.; Contr. 2, plumbing work; Contr. 3, heating and ventilating; Contr. 4, electrical work and lighting fixtures South Manhattan Repair Company HEADQUARTERS, Henry, Pike and Madison Sts., Manhattan Boro. Plans deposit $40. CD 6/22/59.

▲ **N. J., New Brunswick**—BA 8/10—Rutgers University, University Place, Contract 1, GENERAL CONTRACT, Contract 2, STRUCT. STEEL CONTRACT, Contract 3, ELEVATORS, Contract 4, HEATING and VENTILATING, Contract 5, PLUMBING, Contract 6, ELECTRIC or two 4 story DORMITORIES, Neilson Campus, Douglass College. $2,420,000. Scrimenti, Swackhamer & Perantoni, 205 West Main St., Somerville, archts. Voglebach & Baumann, U. S. Hy. 22, Scotch Plains, mech. engrs. Schwartz & Senes, 40 Grand St., Englewood, struc. engrs. CD 7/11/61.

▲ **N. Y., Bayside**—BA 8/17—Bd. Higher Educ., Queensboro Community College, Business Office, 50-00 Cloverdale Blvd., Zone 64, TECHNOLOGY BLDG., Queensborough Community College. Plans deposit $50.

▲ **N.Y., Buffalo**—BA 9/8—H.A. Kresse, Regional Real Estate Manager, Room 5012, Main Post Office, New York, Zone 1, build and lease Central POST OFFICE. $10,000,000-$15,000,000. Plans deposit $60 James, Meadows & Howard, 250 Delaware Ave., Zone 2, archts. CD 1/16/61 under General Services Admin., is owner.

HEAVY CONSTRUCTION—LB & CA

▲ **Gull Contg. Co., Inc.,** 33-15 Lawrence St., Flushing, N. Y., CA **$4,284,078,** GRADING, PAVING, constr. GRADE SEPARATION STRUCTURES, RETAINING WALLS, CURBS, WALKS, DRAINAGE FACILITIES, electrical sys. and landscaping Brooklyn-Queens Expressway (Connecting Hy.) from Woodside Ave. to 64 St. exclusive of Long Island R.R. Bridge, Queens Boro, NEW YORK. President Queens Boro, Boro Hall, Rm. 228, 120-55 Queens Blvd., Kew Gardens 24, N. Y. BA 6/13. CA 7/13. CD 6/15/61, under LB.

▲ **A. S. Wikstrom,** Mottville St., Box 217, Skaneateles, N. Y., CA **$3,052,554,** Contr. 2, East Side TERMINAL FACILITIES, Grampus Bay Area, OSWEGO, N. Y. Port Oswego Auth., West First St., Oswego, N. Y. BA 7/6. CD 7/11/61, under LB.

▲ **Perini Corp.,** 73 Montwait Ave., Framingham, Mass., LB **$5,547,500** WATER TREATMENT PLANT, ROCHESTER, N. Y. Monroe County Water Auth., 339 East Ave., Rochester, N. Y. BA 7/12. CD 7/6/61.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 7/18, BRIDGE,
Poirier & McLane, 33 W. 42 St., New York, N. Y., LB **$3,076,404,** (10 bidders), constr. six Interstate Rte. 80 bridges, East Paterson, Bergen Co. CD 6/22/61.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, ROAD,
George M. Breswter & Son, Inc., 275 West Fort Lee Rd., Bogota, N. J., CA **$3,070,916,** sand drains, incidental work on 0.897 mi. Rte. 95, Section IK, Ridgefield Park and Teaneck, Bergen Co. BA 6/28/61, CA 7/13/61. CD 6/30/61, under LB.

▲† **American Dredging Co.,** 12 S. 12th St., Phila. 7, Pa., LB **$5,821,200,** est. $5,000,000, DREDGING 4 mi. sect. Delaware River, between Trenton, N. J. and Phila., Pa., Sects. D-7 and D-8-A, ENG-39-109-61-66, PENNSYLVANIA and NEW JERSEY. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. BA 7/6/61. CD 5/23/61.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3, ROAD,
H. J. Williams Co., Inc., 150 S. Summer, York, Pa., CA **$2,017,421,** grading, drainage, surfacing The Jones Falls Expressway (Interstate Rte. 83) from Baltimore City Line northward for 2 mi. Baltimore Co. BA 6/13/61. CD 6/19/61, under LB.

BUILDINGS—LB & CA

▲ **Lester Brook and Asen Brothers, Inc.,** 6320 Ave. N, Brooklyn 34, N. Y., Owner Builds, Over **$8,000,000,** The Channels, 205 HOME COMMUNITY, Arkansas Dr. and Bassett Ave., Mill Basin Section, BROOKLYN, N. Y.; **$320,000,** 3,250 ft., BULKHEAD for the Channels Home Community, BROOKLYN, N. Y. CD 6/6/61.

▲ **Joseph P. Blitz, Inc.,** 545 Madison Ave., New York 22, N. Y., LB **$2,583,000,** (4 bidders), general contract Arthur H. Murphy HOUSES, Proj. No. NYS-108, Cross Bronx Expressway, Crotona Ave. and Crotona Park North, Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. BA 7/18/61. CD 7/10/61.

▲ **Deputy Supt. of Schools, Bureau Constr.,** 42-15 Crescent St., 4th Floor, Long Island City 1, N. Y., cancelled bids to have been opened July 13, Proj. E-459, general constr., plumbing and drainage, heating and ventilating PUBLIC SCHOOL 154, W. 127 St. and 8 Ave., Manhattan Boro, NEW YORK, N.Y. **$2,400,000.** CD 7/6/61.

▲ **Pyramid Development Corp.,** 418 Bryant Ave., Brooklyn 13, N. Y., Owner Builds, **$6,000,000,** 19 story, penthouse, 20,600 sq. ft., 265-unit Quaker Ridge APARTMENT, 3 Ave. northeast corner E. 21 St., NEW YORK, N. Y. CD 2/13/61.

▲† **Community Builders, Inc.,** 1730 K St. N.W., Wash., D. C., CA **$5,218,000,** 400 units CAPEHART HOUSING Unit 2, ENG-18-020-61-22, FORT GEORGE G. MEADE, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. BA 4/27. CD 5/1/61, under LB.

▲ **Naham Constr. Co.,** 14002 Georgia Ave., Silver Spring Md., Owner Builds, **$14,250,000** Eastbourne HOUSING DEVELOPMENT (500 HOMES), $2,590,000 First Section, 100 HOMES, Brantford Ave. and Downs Dr., East Springbrook, SILVER SPRING, MD. Bartley-Davis Assocs., 2311 University Blvd. West, Wheaton, Md., archts.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Ala., Huntsville**—BA 8/8—National Aeronautical & Space Admin., George Marshall Space Flight Center, Bldg. 4435, 9 story, 227,000 sq. ft. air conditioned CENTRAL LABORATORY and OFFICE, George C. Marshall Space Flight Center, $4,000,000. Wyatt C. Hedrick, 1200 T & P Bldg., Forth Worth, Tex. archt. CD 1/23/61.

▲† **Fla., Cocoa**—BA About 8/29—U. S. Eng., P.O. Box 4970, Jacksonville, Zone 1, Construction of COMPLEX 27, (a) cape support facilities (b) complex roads, drainage and utilities (c) launch pad and automatic ground control station (d) propellant facilities (e) launch control center (f) instrumentation and communications cable installations (g) umbilical tower (h) service structures (9) chain link fence. Cape Canaveral Missile Test Annex Air Force Missile Test Center, Patrick Air Force Base, ENG-08-123-62-1. Over $10,000,000. CD 6/15/61.

BUILDINGS—BA

▲ **Ga., East Point**—BA 8/16—South Fulton Hospital Auth., 114 S. East Point St., 5 story 150-bed, 100,000 sq. ft. HOSPITAL. $3,000,000. Plans deposit $100. Abreu & Robeson, Inc., 141 Walton St., NW, Atlanta, archt. CD 3/29/61.

▲ **Ala., Auburn**—BA 8/22—Auburn University, Auburn, 3 story, 200,000 sq. ft. PHYSICAL SCIENCE BLDG., $3,000,000. Plans deposit $150. Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, and Pearson, Tittle & Narrows, First National Bank Bldg., Montgomery, archts. CD 4/13/61.

▲ **Ala., Mobile**—BA 8/29—Mobile Infirmary, Louiselle St., 6 story 120,000 sq. ft. HOSPITAL ADDN. $3,400,000. Platt Roberts & Co., 1010 Merchants National Bank Bldg., archts. CD 5/12/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Standard Constr. Co.,** 15 E 11 St., Columbus, Ga. CA Est. **$2,750,000,** SUBSTRUCTURE for POWER PLANT Bankhead Lock and Dam on Warrior River near Tuscaloosa, ALABAMA. Alabama Power Co., Alabama Power Bldg., Birmingham, Ala. Southern Services, Inc., Alabama Power Bldg., Birmingham, Ala., engr. CD 11/25/53.

▲ **TENNESSEE**—State Hy. Dpt., Cotton States Bldg., Nashville, ROADS,
Tenn.—Anderson-Gregory, Inc., Sudekum Bldg., Nashville Tenn., CA **$535,436,** widening existing roadway and drainage structures, incl. two conc. box type bridges, widening present two lane pavement to four lanes with crushed stone and bit. surf. (plant mix) 1.695 mi., Proj. No. F-001-4(29); grading, drainage, const. one conc. deck girder bridge over the L. R.R., surf. with crushed stone surface treatment and seal) 4.361 mi., Proj. No. F-070-1(5), Dickson Co.;
Tenn.—T. E. Gillespie Constr. Co., 520 Park Ave., P.O. Box 104, Lebanon, Tenn., CA **$636,688,** grading, paving with crushed stone, bit. materials (plant mix) 4.029 mi. Proj. No. F-024-1(2), Wilson Co.;
Tenn.—L & M Constr. Co., 843 Vance Ave., Memphis, Tenn., CA **$829,741,** grading, drainage, and constr. seven bridges, 7.572 mi. Proj. No. I-40-1(37)34, Fayette Co.;
Tenn.—Oman Constr. Co., Acklen Park, Nashville, Tenn., CA **$3,592,769,** grading, drainage, paving with cement conc., constr. four bridges, 1.358 mi. Proj. No. I-24-3(19)123, Hamilton Co. Grand total $5,594,634. BA 6/30/61. CA 7/10/61. CD 7/7/61, under LB.

▲† **Markwell & Hartz,** 3574 Summer, Memphis, Tenn., LB **$2,861,841,** BRIDGE over Pickwick Landing Dam on Tennessee River, Savannah, TENNESSEE. Tennessee Valley Authority, New Sprankles Bldg., Knoxville, Tenn. BA 7/13/61. CD 6/23/61;
Oman Constr. Co., Acklen Park, Nashville, Tenn., LB **$776,555,** bridge approaches over Pickwick Landing Dam on Tennessee River, Savannah, (Tennessee.).

BUILDINGS—LB & CA

▲ **Community Builders, Inc.,** 1730 K St. N.W., Wash., D. C., CA Est. **$3,000,000,** 271 unit APARTMENT, Seminary Rd., ALEXANDRIA, VA. Seminary Assocs., 1730 K St. N.W., Wash., D. C. Corning, Moore, Elmore & Fisher, 1302 18th St. N.W., Wash., D. C., archts.

▲ **R. L. Coleman & Co.,** P.O. Box 1636, Asheville, N. C., Owner Builds, **$3,000,000,** 250,000 sq. ft. Parkway Plaza SHOPPING CENTER, Intersection Hys. 70 and 74, ASHEVILLE, N. C. Lyles, Bissett, Carlisle & Wolff, 1800 Gervais St., Columbia, S. C., archts. CD 7/12/60.

▲ **Rea Constr. Co., Inc.,** P.O. Box 1092, Charlotte, N. C., CA **$5,887,700,** general contract FORSYTH GENERAL HOSPITAL, WINSTON-SALEM, N. C. Forsyth Co. Bd. Comrs., Courthouse, Winston-Salem, N. C., BA 7/6/61. CD 5/16/61.,
Hicks & Ingle Co., P.O. Box 3323, Charlotte, N. C., CA **$768,274,** plumbing contract, Forsyth General HOSPITAL (Winston-Salem, N. C.), BA 7/6/61, CD 7/7/61, under LB.,
W. H. Sullivan & Co., Inc., P.O. Box 209, Greensboro, N. C., CA **$1,169,000,** heating and air-conditioning contract Forsyth General HOSPITAL (Winston-Salem, N. C.). BA 7/6/61, CD 7/7/61, under LB.,
Bryant Electric Co., 1901 English St., High Point, N. C., CA **$1,090,000,** electric contract, Forsyth General HOSPITAL (Winston-Salem N. C.). BA 7/6/61. CD 7/7/61, under LB. Grand total $8,914,974.

▲ **William E. Arnold Co.,** P.O. Box 371, Jacksonville, Fla., CA **$4,093,700,** 10 story, BANK-OFFICE ADDN., 2 story PENTHOUSE, JACKSONVILLE, FLA. Barnett National Bank of Jacksonville, Adams and Forsyth Sts., Jacksonville, Fla. Kemp, Bunch & Jackson, 1320 Coast Line Bldg., 500 Waters St., Jacksonville, Fla., archts.

▲ **Frank J. Rooney Constr. Corp.,** 405 S. Dale Mabry Hy., Tampa, Fla. CA Est. **$5,600,000,** 15 story, Skyway Bridge Towers APARTMENTS, ST. PETERSBURG, FLA. Radice Constr. Corp., 10 Franklin Ave., White Plains, N. Y. Gerber, Pancani & Crowder, 1007 Dupont Plaza Center, Miami, Fla., archts. CD 3/16/61.

▲ **Scientific Design Co.,** 2 Park Ave., New York, N. Y., CA design and construct PLANT for making adipic acid, LOUISVILLE, KY. Rohm & Hass Co., 222 Washington St., Phila., Pa. CD 6/29/61.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ind., Indianapolis**—BA 8/11—Bd. Sanitary Comrs., 421 N. Pennsylvania St., East-Marion Co. INTERCEPTOR SEWER, first section, Div. B, Contract No. 61-S1-9B-MH, Plans deposit $100, Moore & Heger, 810 N. New Jersey St., engrs.; Belmont INTERCEPTOR SEWER, North Branch, Section C-Contract 60-S1-14 C-HS, Plans deposit $100, Henry B. Steeg & Assocs., 3338 N. Illinois St., Zone 8, engrs. CD 4/10/61.

BUILDINGS—BA

▲ **Ill., Chicago**—BA 8/31—Building Services Employees International Union, 312 W. Randolph St., 10 story OFFICE, THEATRE, $16,500,000. Bertrand Goldberg, 721 N. Michigan Ave., archt. CD 3/3/60.

(Continued on page 59)

Hooking up the holes proceeds without danger of premature detonation from stray electric currents.

Delay connectors are attached to Primacord downlines; LEDC trunklines are cut and crimped into these connectors.

The dual connections are taped securely together and the ends of the Primacord downlines are tied.

ENSIGN-BICKFORD LEDC helps solve blasting noise problems at General Crushed Stone Quarry

The Glen Mills Quarry of the General Crushed Stone Company at Glen Mills, Pa., is located in the heart of a residential area. *And its neighbors don't like noise!*

The quarry produces aggregate from hard granite gneiss, very blocky and seamy. High explosives are used with Primacord downlines for in-hole initiation. These downlines are hooked into a surface system of LEDC trunklines and Delay Connectors.

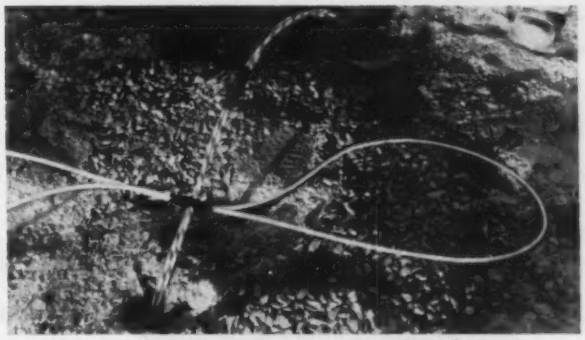
Danger of Prematures Minimized

Blasts are set off at a specified time each day. This means that loaded holes may stand for several hours before blast time. To minimize danger from stray electric currents, the electric blasting caps are never attached until the last minute.

The use of trunklines of Ensign-Bickford Low Energy Detonating Cord has practically eliminated the noise problem—and without danger of premature shots from stray currents.

This blast was set off on December 6, 1960. It consisted of eight 7-in., 50-ft. holes at 15-ft. intervals in a line 20 feet back of the base of a 46-ft. face. Loading was under the direction of Harry Kemery, Superintendent, and Morton McGuirk, General Quarry Foreman. High explosives were used with two primers in each hole, initiated by Plastic Wire Countered Primacord downlines.

A continuous line of LEDC was laid from Hole No. 8 to Hole No. 1 and back again, forming two trunklines. Delay Connectors were attached to each downline, and the trunklines were cut and crimped into the Connectors, which were then taped securely together.



Two Electric Blasting Caps were taped onto the Primacord downlines at No. 1 Hole, which fired instantaneously. Succeeding holes were progressively delayed 15 milliseconds.

Noise was no problem! . . . just the normal thud of explosives breaking rock.

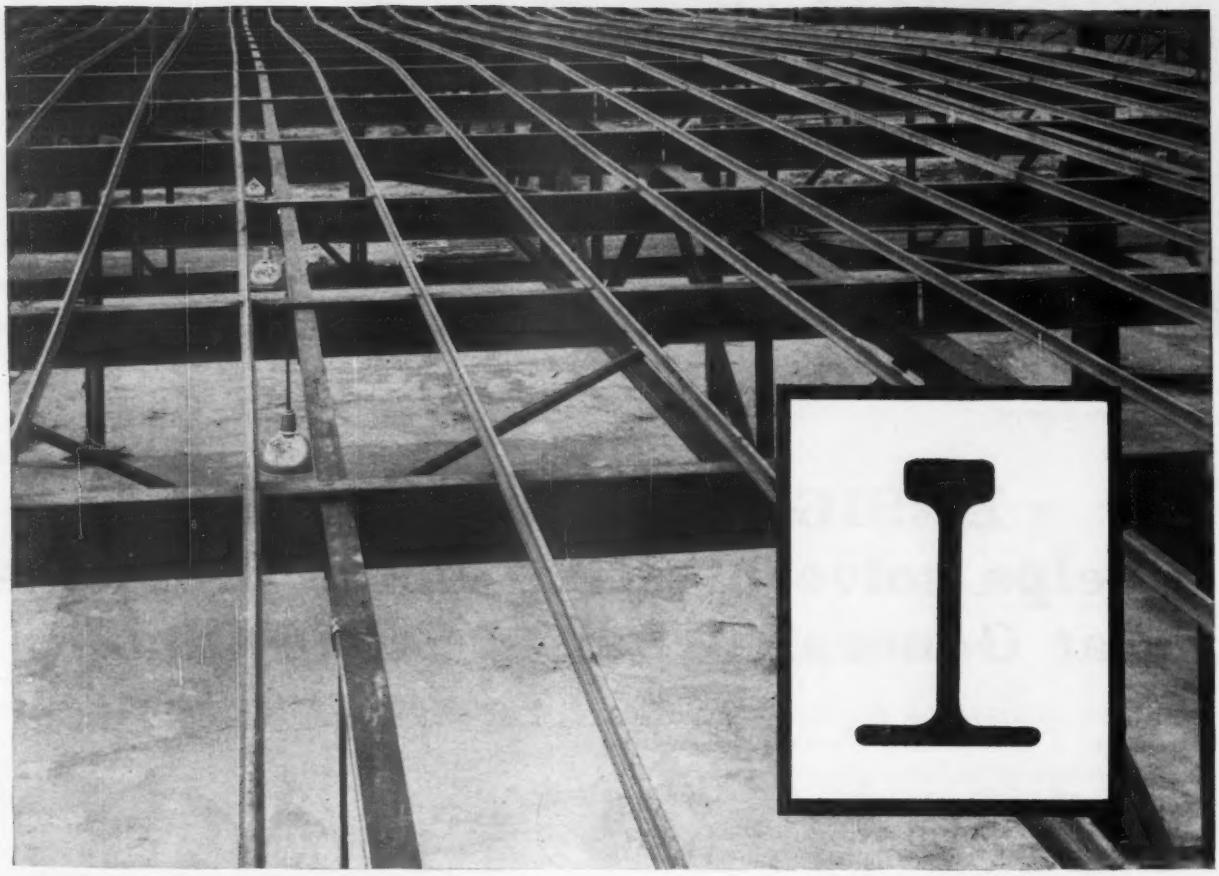
Ensign-Bickford LEDC is a Low Energy Detonating Cord with two grains PETN per foot, encased in a lead tube and protected by a plastic jacket. It detonates throughout its entire length at nearly four miles per second, but detonation noise is *low*. 150 feet of LEDC makes no more noise than a single blasting cap!

LEDC will not directly initiate Primacord or other cap-sensitive explosives. It is used with connectors developed by E. I. du Pont de Nemours & Co., Inc. LEDC is made only by Ensign-Bickford. Both are available through all explosives manufacturers.

If you have blasting noise problems, LEDC may be the answer. Write for free bulletin; also a free copy of the new Primacord catalog and manual is available through your explosives manufacturer—or write giving your company name.

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut • Since 1836

EB



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(Continued from page 56)

BUILDINGS—LB & CA

▲† **Robert Simmons Constr. Co.**, 840 Barret Ave., Louisville, Ky., CA **$2,942,000**, STANDARDS CALIBRATIONS LABORATORY, INERTIAL GUIDANCE MAINTENANCE FACILITY, at U. S. Air Force, Heath Annex, NEWARK, O. Fourth Naval Dist., Naval Base, Phila., Pa. CA 7/1/61.

▲ **R. H. Bowers Constr. Co.**, 6645 Whitcomb Pl., Dayton, O. Owner Builds, **$5,000,000**, first year $1,000,000, (3 to 4 year program) 200 HOMES, Forest Park, SPRINGDALE, (Br. Glendale) O.

▲ **James McHugh Constr. Co.**, 6449 S. South Park Ave., Chicago, Ill., LB **$3,530,000**, Hektoen Institute HOSPITAL, CHICAGO, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago 2, Ill. BA 7/18/61. CD 6/29/61.

▲ **Mercury Builders**, 761 S. Harlem St., Forest Park, Ill., LB **$3,284,471**, TRANSIT BUS OVERHAUL BLDG., 77th and Vincennes Sts., CHICAGO, ILL. Chicago Transit Auth., Merchandise Mart, Chicago, Ill. BA 7/17/61. CD 7/12/61.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **South Dakota**—BA On Or About 10/5—U. S. Eng., 6012 U. S. Post Office & Court House, Omaha, 2, Neb., EARTHWORK Stage II, Big Bend Reservoir Proj., ENG-25-066-62-15. $5,000,000.

BUILDINGS—BA

▲ **Tex., La Marque**—BA 8/30—Galveston County Memorial Hospital, c/o Co. Judge, Courthouse, Galveston, MEMORIAL HOSPITAL. $3,200,000. Page, Southerland & Page, & Whit Phillips, 602 West Ave., Austin, archts. CD 9/29/60.

HEAVY CONSTRUCTION—LB & CA

▲† **Paul Hardeman, Inc.**, 10579 Dale Ave., Stanton, Calif., and **Fischbach & Moore, Inc.**, 1717 Baylor, Dallas, Tex., CA **$37,700,000**, Phase II of Titan II MISSILE LAUNCH FACILITIES, 18 sites in Central Arkansas, incl. plumbing, electrical work, interior walls, etc., near Little Rock Air Force Base, ENG-04-548-61-42, LITTLE ROCK, ARK. U. S. Eng., Ballistic Missile Constr. Office, Air Force Unit Postoffice, Los Angeles 45, Calif. BA 6/29/61. CD 7/12/61, under LB.

▲ **James & Sabine Dredging & Constr.**, Hy. 175 East, Dallas, Tex., LB **$143,562**, Contr., DREDGING, BEAUMONT, TEX. Port of Beaumont, Bd. Comrs., 1255 Main St., Beaumont, Tex., BA 7/11/61, CD 7/5/61;
Trotti-Thompson, Inc., 390-S. 4th St., Beaumont, Tex., LB **$1,069,750**, Contr. 2, GENERAL CARGO, WHARF OPEN STORAGE WHARF, GRAIN LOADING, WHARF, riprap, (Beaumont, Tex.);
McKensie-Hague-Gillis, 1116 Flour Exchange Bldg., Minneapolis 15, Minn., LB **$4,974,710**, Contr 3, 3 million bu. GRAIN ELEVATOR, (Beaumont, Tex.).
Wm. A. Smith Constr. Co., 6060 Armour St., Houston, Tex., LB **$352,482**, Contr. 5, RAILROADS, incl. 26,000 lin. ft. std. gauge tracks, turnouts, crossings, yards, (Beaumont, Tex.).

BUILDINGS—LB & CA

▲ **Dondlinger & Sons**, Box 398, Wichita, Kan., LB **$1,529,195**, (4 bidders), general contract 4 and 5 story, rein-con. masonry, air-conditioned MEDICAL CENTER MAIN BLDG.; 40 x 120 ft. BOILER and MAINTENANCE BLDG., GREAT BEND, KAN. Community Hospital Assoc., Inc., c/o Earl Immenschuh, 3623 Broadway, Great Bend, Kan. BA 6/27/61, CD 5/31/61;
Olson Constr. Co., 410 S. 7th St., Lincoln, Neb., LB **$2,883,944**, general, mechanical, air-conditioning electric contract, etc., 4 and 5 story MEDICAL CENTER MAIN BLDG., 40 x 120 ft. BOILER MAINTENANCE BLDG., (Great Bend, Kan.);
U. S. Engineering Co., Box 266, Topeka, Kan., LB **$752,568**, heating, plumbing and air-conditioning contract, 4 and 5 story MEDICAL CENTER MAIN BLDG. and BOILER and MAINTENANCE BLDG., (Great Bend, Kan.).

▲ **Alamo Lumber Co.**, Petroleum Commerce Bldg., San Antonio, Tex., CA **$4,174,525**, SHOPPING CENTER, HARLINGEN, TEX. Sun Valley Shopping Center, Roy L. Martin, Angleton, Tex. Dom Tomasco Associates, 2625 Richmond Ave., Houston, Tex., archts. CD 7/20/61, under Owner, c/o Dom Tomasco, as owner.

▲ **C. & E. Contractors**, 15002 Almeda, Houston, Tex., CA **$2,500,000**, CEMENT MFG. PLANT, 1½ million bbl. annual cap., 38 acre tract, Industrial Way, HOUSTON, TEX. McDonough Co., South Side, Parkersburg, W. Va.

▲ **Mead & Mount Constr. Co.**, 1560 Denver Club Bldg., Denver 2, Colo., CA **$3,133,000**, General Rose HOSPITAL ADDN., DENVER, COLO. General Rose Memorial Hospital, 9th Cherry Sts., Denver, Colo., (Correction cost). BA 6/27/61. CD 7/17/61, under CA.

▲ **N. G. Petry Constr. Co.**, 1114 West 7th Ave., Denver, Colo., CA Approx. **$4,000,000**, 11 story OFFICE, 100,000 sq. ft. UNDERGROUND PARKING, DENVER, COLO. Capitol Life Insurance Co., 1620 Sherman, Denver, Colo. Edwin A. Francis, 218 E. Speer Blvd., Denver, Colo., archt. A. J. Ryan Assoc., 1340 Glenarm Place, Denver, Colo., struct. engrs. Swanson-Rink & Assocs., 1640 Boulder, Denver, Colo., mech. engrs.

FAR WEST

BUILDINGS—BA

▲ **Calif., Los Angeles**—BA 8/8—Bd. Regents University of California Administration Bldg, CHEMISTRY GEOLOGY BLDG. ADDN., Step 1, at Ucla Estate, $4,000,000. Stanton & Stockwell, 2410 Beverly Blvd., archts. Brandow & Johnson, 2430 West 3rd St., engrs. CD 5/12/60.

▲† **Wash., Fort Lewis**—BA 9/5—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, 500 unit Capehart FAMILY HOUSING, ENG-62-5. $8,000,000. Plans deposit $10. Jones, Lovegren, Helms & Jones, Washington Bldg., Seattle, archts. CD 11/17/60.

HEAVY CONSTRUCTION—LB & CA

▲† **Morrison-Knudsen, Inc.**, 319 Broadway Ave., Boise, Idaho, LB Schedule 1, **$4,221,337**, est. $3,666,730, (9 bidders), Colorado River Storage Project, Glen Canyon Ship Rock 230 kv. TRANSMISSION LINES, DC 5610, ARIZONA and NEW MEXICO, Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver, Federal Center, Denver Colo., BA 7/18/61, CD 7/13/61;
Broadway Maintenance Corp., 2642 Pennsylvania Ave., Pittsburgh, Pa., LB Schedule 2, **$566,520**, est. $1,213,055, Colorado River Storage Project, Glen Canyon Ship Rock TRANSMISSION LINES, DC-5610, (Arizona and New Mexico).

▲ **CALIFORNIA**—State Div. Hys., 120 South Spring St., Los Angeles, Bids opened July 13, ROADS,
Calif.—**Peter Kiewit Sons' Co.**, 345 Kieways Ave., Arcadia, Calif., LB **$3,659,857**, (7 bidders), grading, paving to constr. 4/10 mi. 8 lane freeway on Santa Monica Freeway and ten traffic structures between Hillcrest Dr. and Hoover St., Los Angeles Co., CD 6/7/61; LB **$2,229,706**, (12 bidders), constr. roadway embankment, 2 bridges, connecting roads for future 6 lane freeway, U. S. Hy. 101 near Del Mar and Carlsbad, San Diego, Co., CD 6/14/61;
Calif.—**Fredrickson & Watson Constr. Co.**, 873 81st Ave., Oakland, Calif., LB **$1,519,020**, (5 bidders), grading, paving to constr. 1 mi. 6 lane freeway, U. S. Hy. 101, and widening 3.7 mi. State Sign Rte. 23 west of Thousand Oaks for 3.7 mi., Ventura Co., CD 6/14/61.

▲ **CALIFORNIA**—State Div. Hys., 120 South Spring St., Los Angeles, ROAD,
Winston Bros. Co. & Green Constr. Co., P.O. Box 1218, Arcadia, Calif., CA **$4,857,329**, grading, paving to constr. 5.6 mi. 4 lane freeway on U. S. Hy. 60 between Sunnyslope and Orange St. in Riverside, Incl. 11 Bridges, Riverside Co. BA 6/29/61. CD 7/6/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, ROAD,
Dan Caputo Co., Dan Caputo and Cambrian Gateway, 650 Race St., San Jose, Calif., CA **$4,129,100**, widening from 6 to 8 lanes 5.6 mi. Nimitz Freeway (Sign Rte. 17) between Hegenberger Rd. and Fallon St. In Oakland, incl. 10 retaining walls, ramp and widening, 7 bridges, Alameda Co. BA 6/28/61. CD 6/30/61, under LB.

▲ **CALIFORNIA**—State Div. San Francisco Bay Toll Crossings, 151 Fremont St., San Francisco, BRIDGE,
Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., CA **$13,278,590**, 4½ mi. four-lane concrete trestle to replace easterly portion present two-lane San Mateo-Hayward Bridge (2nd. Major Stage), San Mateo and Alameda Counties. BA 7/11/61. CD 7/14/61, under LB.

▲ **N. A. Artukovich Constr. Co.**, 723 Union St., Montebello, Calif., CA **$2,498,500**, Proj. 58, South Central Business District STORM DRAIN, Los Angeles and Vernon, LOS ANGELES, CALIF. Los Angeles Cunty Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. BA 6/30, CA 7/11. CD 7/7/61, under LB.

▲ **Kaiser & Raymond International**, 300 Lakeside, Oakland, Calif., LB **$7,425,499**, (3 bidders), constr. Loon Lake EARTHFILL DAM and DIKE, incl. excavation 1 mi. cu. yd., Upper American River Project, El Dorado Co., SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., 1708 59th St., Sacramento, Calif. BA 7/18/61. CD 7/10/61.

BUILDINGS—LB & CA

▲ **Tolboe & Harlin**, 3091 S. Main St., Salt Lake City, Zone 15, Utah, CA **$4,822,897**, est. $5,000,000, (9 bidders), 432 one and two bedroom units; 30 three bedroom units for MARRIED STUDENTS HOUSING, PROVO, UTAH. Brigham Young University, 865 N. 7th East, Provo, Utah. BA 7/6/61. CD 6/19/61.

▲ **Cawdrey & Vemo, Inc.**, 3601 Fremont Ave., Seattle 3, Wash., CA Est. **$4,500,000**, 15 story, rein.-con. RETIREMENT HOME, air-conditioned DINING ROOM, SEATTLE, WASH. Presbyterian Ministries, Inc., 1104 17th Ave. N., Seattle, Wash. CD 6/29/60.

▲ **Harris Constr. Co.**, 264 Palm St., Fresno, Calif., LB **$2,964,213** (5 bidders), 4 story, bsmnt., 125 bed, reinf. conc., gravel roof deck, Sacred Heart HOSPITAL ADDN., HANFORD, CALIF. Dominican Sisters of the Third Order of St. Dominic Inc., 1025 N. Douty St., Hanford, Calif. BA 7/6/61. CD 6/21/61.

CANADA

BUILDINGS—BA

▲ **Ont., Milton**—BA 8/23—Ontario Dpt. P. Wks., Parliament Bldgs., Toronto, first stage, PROVINCIAL SCHOOL for DEAF CHILDREN Incl. 1 story, brick JUNIOR SCHOOL, HOSPITAL ADMINISTRATION, laundry and boiler plant, 2 story steel frame, brick staff residence. Plans deposit $500. CD 5/14/59.

HEAVY CONSTRUCTION—LB & CA

▲ **Tallman Constr. Co., Ltd.**, 600 Panet Rd., Winnipeg, Man., LB **$2,908,034**, STRENGTHENING RUNWAYS, RUNWAY EXTENSIONS, CONNECTING TAXIWAY TO THRESHOLD OF RUNWAY, Winnipeg International Airport, WINNIPEG, MAN. Dpt. Transport, Hunter Bldg., Ottawa, Ont. BA 7/11/61. CD 6/26/61.

▲ **Robertson-Yates Corp., Ltd.**, Box 301, Hamilton, Ont., CA **$2,500,000**, Contract 4, Canadian Side, TERMINAL and APPROACHES, Queenston-Lewiston Bridge Proj., ONTARIO and NEW YORK, Niagara Falls Bridge Comn., 1781 River Rd., Niagara Falls, Ont. BA 6/6/61. CD 6/26/61, under LB.

BUILDINGS—LB & CA

▲ **Foundation Co. of Canada Ltd.**, 221 Bonnie Doon Shopping Centre, Edmonton, Alta., LB **$2,916,775**, (9 bidders), 240x425 ft. SPORTS BLDG., EDMONTON, ALTA. Edmonton Exhibition Assn., Ltd., Exhibition Grounds, Edmonton, Alta. BA 6/30/61. CD 6/8/61.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Honduras**—BA 9/12—Director General of Highways, Office of the Ministry of Communications & Public Works, Tegucigalpa, D. C., EXTENSION 50 mi. WESTERN HIGHWAY between Santa Rosa de Copan and Nueva Ocotepeque. $9,000,000. Plans deposit $150. CD 5/20/58.

HEAVY CONSTRUCTION—LB & CA

▲ **COSTA RICA**—National Procurement Office, San Jose, ROAD,
Empressa Construcora Raefel Herrera Ltd., San Jose, Costa Rica, CA **$3,495,430**, divided hy. between San Jose and El Coco Airport, San Jose for Inter-American Highway. BA 2/24. CD 3/6/61, under LB.

▲ **Morrison-Knudsen Co., Inc.**, 150 E. 42nd St., New York 17, N. Y., U.S.A. CA **$7,000,000-$8,000,000**, DRIVING two 7 mi. WATER TUNNELS, PERU. Cerro Corp., 300 Park Ave., New York 22, N. Y., U.S.A. Owner will build remainder of project by own forces. CD 4/7/61.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Australia**—BA 10/30—Business Manager Snowy Mountains Hydro-electric Auth., P.O. Box 332, Cooma North, N.S.W., Contr. No. 20,063, GEEHI DAM, rockfill dam approx. 300 ft. high and crest length approx. 865 ft. with central earth core, river outlet works and morning glory type spillway; The Snowy-Geehi TUNNEL (Geehi Section) 30,000 ft. horseshoe shaped tunnel partially lined with concrete 20 ft. 4 in. high and 20 ft. 8 in. wide; 20 ft. diam. circular tunnel approx. 2,400 ft. long connecting Snowy-Geehi Tunnel to Murray I Pressure Tunnel and an outlet-inlet structure 190 ft. high will connect to circular tunnel approx. 80 ft. below ground surface level; Contr. No. 20,064, Murray I PRESSURE TUNNEL, fully concrete lined horseshoe shaped pressure tunnel 22 ft. 9 in. high x 22 ft. 9 in. wide, approx. 36,000 ft. long, section fully lined circular tunnel 22 ft. 9 in. diam. approx. 2,000 ft. long; downstream end the tunnel will bifucate into two 13 ft. 9 in. internal diam. tunnels each approx. 600 ft. long; approx. 450 ft. of each tunnel adjacent to rein.-con. surface valve house will be steel lined. At Bogong Creek there will be an intermediate intake shaft 315 ft. deep and access and drainage adit, surface surge tank 150 ft. diam. connected to pressure tunnel by vertical concrete lined shaft 27 ft. diam. and approx. 350 ft. deep. Tender documents may be obtained on payment $22 (U.S.) per set for each contract, on application to Australian Consulate-General, International Bldg., Rockefeller Center, 636 Fifth Ave., New York, N. Y., U.S.A.

HEAVY CONSTRUCTION—LB & CA

▲ **C. Zschokke AG, Heinrich Hatt-Haller AG and Locher & Cie AG**, Zurich, Switzerland, CA Est. **$77,000,000**, design and construct 7.5 mi. SUBWAY, ZURICH, SWITZERLAND. City, City Hall, Zurich, Switzerland.

BUILDINGS—LB & CA

▲ **E. G. Ladopoulos Co.**, Patras, Greece, CA Est. **$5,500,000**, PAPER PULP FACTORY, ACHAIA, GREECE. Government of Greece, Athens, Greece.

For additional reports see CONSTRUCTION DAILY, REPORTS SECTION

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

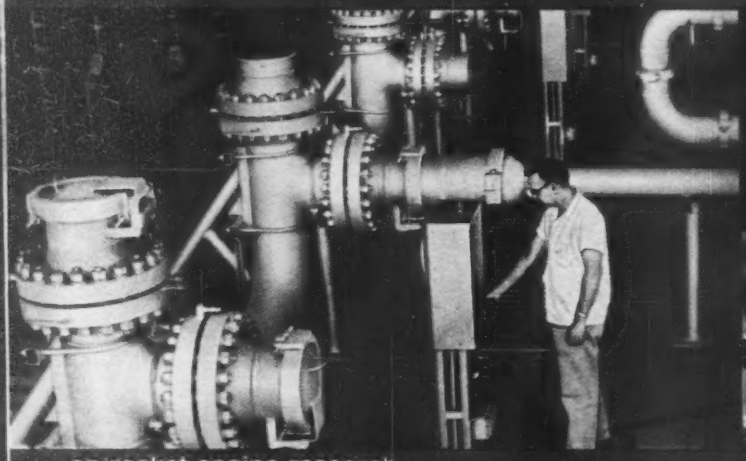
▲ **Ill., Alton**—City, City Hall, INTERCEPTOR SEWERS, SEWAGE DISPOSAL PLANT, incl. Piasa Valley Sewer, imprv. sewers Upper Alton, Broadway, Alton Plaza and Milton areas, Shields Valley, **$8,075,000**. Sheppard, Morgan & Schwab, 10 E. Broadway, consult. engrs. CD 9/12/60.

▲ **Mich., Mount Clemens**—South Macomb Drainage Bd., Macomb County Drain Comn., 115 Grosebeck Hy., South Macomb County DRAIN, STORM RELIEF SEWERS, Proj. Chapter 20, Roseville, East Detroit and Warren. Over **$29,000,000**. Thomas S. Welsh, co. drain comn.

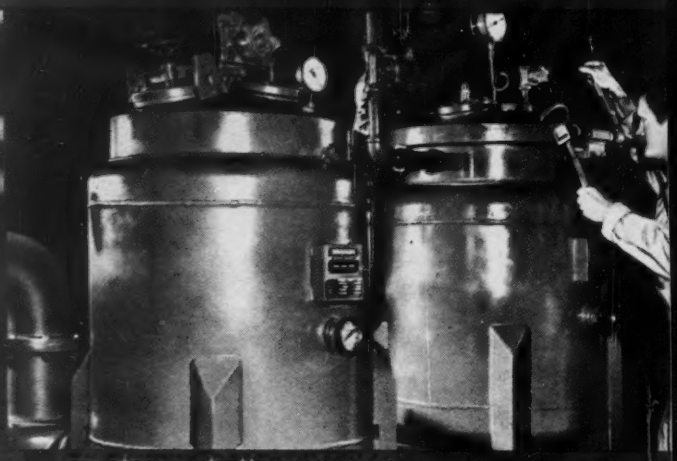
▲ **Minn., St. Paul** — Minneapolis-St. Paul Sanitary Dist., 2400 Childs Rd., St. Paul, SEWAGE DISPOSAL PLANT expansion, Pig's Island, Mississippi

(Continued on page 62)

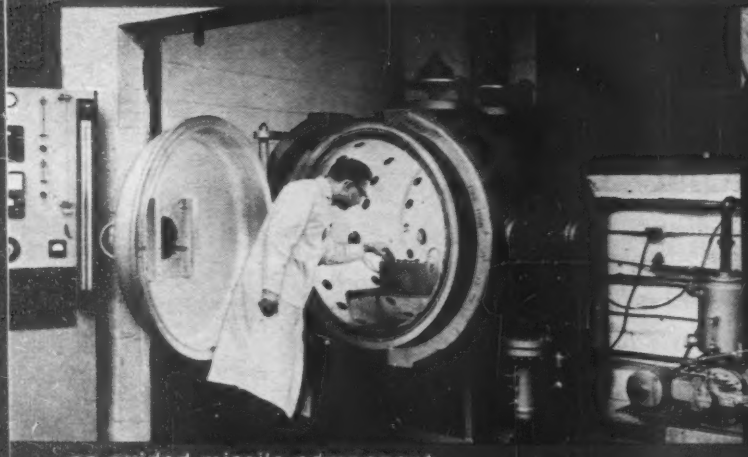
TUBE-TURN® Hinged



on rocket engine research
and development systems . . .



on storage battery vacuum
impregnation equipment . . .



on guided missile component
environmental test chambers . . .

on pipe line "pig" launching
and recovery terminals . . .

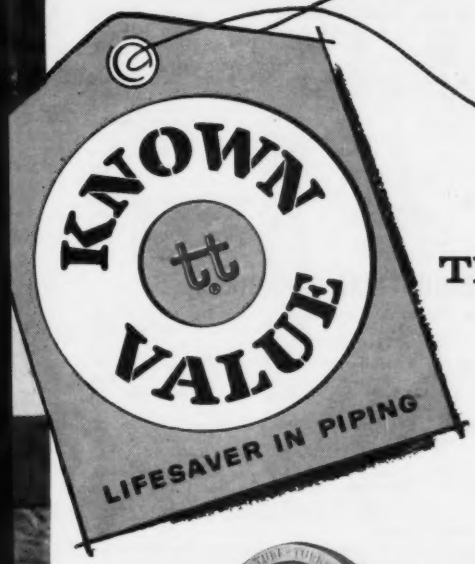
on synthetic rubber
manufacturer's blowdown tanks . . .

on paint manufacturer's
vacuum reactor vessels

TUBE-TURN Hinged Closures are stocked by and sold exclusively through Authorized Distributors.

Closures pay their way

all the way!



They save in system design
in easier installation
in faster, safer operation

If your operations require quick or frequent access to pipe ends, tank or vessel openings, TUBE-TURN Hinged Closures provide a swift, safe and economical solution. So simple to operate, one man can open and close even the largest TUBE-TURN Hinged Closure in a matter of minutes. No hammering, no tugging, no wrestling with massive caps or flanges. Just loosen the yoke bolts, swing back the head, and the opening is fully exposed and accessible.

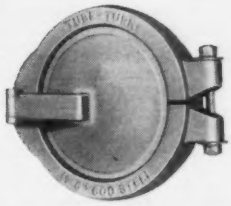
The exclusive *self-locking* tapered yoke, head, and hub design of TUBE-TURN Hinged Closures assure positive and uniform sealing while the self-bleeding safety feature of double bolt closures forewarns the operator should he try to open the closure under pressure.

TUBE-TURN Hinged Closures cut your installation costs too. Completely factory assembled, no time or effort is wasted on job-site fabrication. Only one circumferential weld is needed to join the closure to the pipe end or vessel opening.

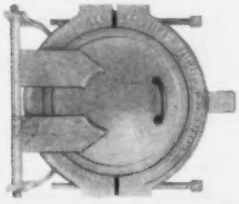
TUBE-TURN Hinged Closures are regularly furnished in forged carbon steel. However, they are also available in other metals and alloys and may be glass lined or stainless clad. They also may be furnished to meet design requirements of ASME.

For the practical, dependable, safe solution to your closure problems, specify TUBE-TURN Hinged Closures. Look for the famous "tt" trademark when you buy. It's your guarantee of quality . . . the mark of *known value.* Write for Bulletin TT1034-G169. TUBE TURNS, Louisville 1, Kentucky.

"TUBE-TURN" and "tt" Reg. U. S. Pat. Off.



SINGLE BOLT TYPE
with Removable or Swing Bolt
in sizes 2" thru 8" for ASA 150-lb,
300-lb or 600-lb Service



DOUBLE BOLT TYPE
with Double-Ended Bolts
in sizes 8" thru 42" for ASA 150-lb,
300-lb or 600-lb Service

VERTICAL TYPE
with Attached Wrenches
and Counterbalanced Head
in sizes 8" thru 42" for
ASA 150-lb Service

TUBE TURNS

Division of CHEMETRON *Corporation*

(Continued from page 59)

River to serve Minneapolis-St. Paul and 24 suburbs. $20,000,000. Toltz, King, Duvall, Anderson & Assocs., 1408 Pioneer Bldg., St. Paul, consult. engrs. Bids 1962.

▲ **O., Eastlake**—City, City Hall, bond election Nov. 7, SEWERS. $3,600,000.

▲ **O., Lorain**—City, City Hall, $4,000,000, bond election Nov. 7, STORM SEWERS. CD 11/14/60.

▲ **Ont., London**—City Council, City Hall, SEWERAGE SYSTEM EXTENSIONS, $6,853,900. K. R. Rowntree, City Hall, engr. CD 7/27/60.

BRIDGES

▲ **Man., Winnipeg**—Metropolitan Corp. of Greater Winnipeg, 100 main St., three 12 ft. lane BRIDG over Assiniboine River, St. James. $4,000,000. CD 11/9/53.

STREETS AND ROADS

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, ROADS,

Allegheny Co.—7.56 mi. constr. of T.R 50 and 519 between Bridgeville and Pittsburgh, $3,000,000.

Columbia Co.—reconstr. 3.01 mi. Rte. 339 (Orangeville-by-pass) Blacktop, 22 ft. wide, $1,350,000.

Luzerne Co.—widening T.R. 26 from 2 lanes to 4 lane hy. as feeded for Keystone Shortway, 2.3 mi., between Black Ridge interchange of Shortway (Interstate 81) and Hazleton, $900,000. CD 11/30/60.

EARTHWORK, WATERWAYS

▲ **Illinois**—Div. Waterways, State of Illinois, State Office Bldg., Springfield,

Stage 1—FLOOD CONTROL EXCAVATION, 59th St., to Salt Creek, Summit, Chicago, $4,996,000.

Stage 2—FLOOD CONTROL, EXCAVATION Salt Creek to Silver Creek, $3,542,000.

Stage 3—FLOOD CONTROL, Silver Creek to Willow Creek EXCAVATION and Lawrence Ave. Dam, $3,480,000.

Stage 4—FLOOD CONTROL, EXCAVATION from Willow Creek to McDonald Creek, $2,446,000.

Stage 5—FLOOD CONTROL, EXCAVATION, McDonald Creek to Indian Creek, Libertyville, $2,253,000.

Stage 6—FLOOD CONTROL, EXCAVATION and reservoir No. 1, Libertyville, $1,721,000.

UNCLASSIFIED

▲† **N. Y., Flushing**—United States of America, 14 and "E" Sts. N.W., Wash., D.C., plans by Wallace K. Harrison, 630 Fifth Ave., New York, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $20,000,000, (no appropriation).

▲ **N. Y., Flushing**—State of New York, Dpt. P. Wks., Bureau Contg. & Accounts, State Office Bldg., Albany, N. Y., plans by Carl Larson, State Office Bldg., Albany, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $3,500,000.

▲ **N. Y., Flushing**—Port of New York Authority, G. F. Tozzolo, 111 8th Ave., New York, N. Y., JOINT EXHIBITION PAVILION, World's Fair Exhibits. $25,000,000.

▲ **N. Y., Flushing**—Govt. Bulgaria, Bulgaria Embassy, 2610 16 St., N.W., Wash., D. C., EXHIBITION, PAVILION, World's Fair Exhibit. $5,000,000.

▲ **N. Y., Flushing**—Govt. China, China Embassy, 2311 Mass. Ave., N.W., Wash., D. C., EXHIBITION PAVILION, World's Fair Exhibit. $5,000,000.

▲ **N. Y., Flushing**—Govt. of Italy, 686 Park Ave., New York, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $5,000,000.

▲ **N. Y., Flushing**—Union of Soviet Socialist Republic, 680 Park Ave., New York, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $5,000,000.

▲ **N. Y., Flushing**—Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh, Pa., and 230 Park Ave., New York, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $3,000,000.

▲ **N. Y., Flushing**—Edward H. Burdick Assoc., Inc., 104 E. 40 St., New York, N. Y., plans by LoPinto & Bennett, 50 E. 42 St., New York, N. Y., BETTER LIVING PAVILION, World's Fair Exhibit. $3,000,000. CD 3/29/61.

▲ **N. Y., Flushing**—Chase Manhattan Bank, 18 Pine St., New York, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $3,000,000. Moran, Proctor, Mueser & Rutledge, 415 Madison Ave., New York 17, N. Y., consult. engrs. making ground studies.

▲ **N. Y., Flushing**—E. I. DuPont De Nemours & Co., DuPont Bldg., Wilmington, Del., EXHIBITION PAVILION, World's Fair Exhibit. $3,000,000.

▲ **N. Y., Flushing**—Fashion Industry, c/o Jos V. Connolly, Jr., 521 5 Ave., New York, N. Y., plans by Caleb Hornbostel, 112 E. 19 St., New York, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $6,000,000.

▲ **N. Y., Flushing**—General Motors Corp., Mr. A. H. Belfie (In Charge), General Motors Bldg., Detroit, Mich., EXHIBITION PAVILION, World's Fair Exhibit. $5,000,000. CD 2/14/61.

▲ **N. Y., Flushing**—National Dairy Products Corp., 260 Madison Ave., New York, EXHIBITION PAVILION, World's Fair Exhibit. $3,000,000.

▲ **N. Y., Flushing**—Radio Corp. of America, C. Capsis, In Charge, 30 Rockefeller Plaza, New York, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $3,000,000.

▲ **N. Y., Flushing**—Travelers Ins. Co., 700 Main St., Hartford, Conn., EXHIBITION PAVILION, World's Fair Exhibit. $3,000,000. Walter Darwin Teague, 415 Madison Ave., New York, N. Y., designer.

▲ **N. Y., Flushing**—F & M Schaefer Brewing, 430 Kent Ave., Brooklyn, N. Y., EXHIBITION PAVILION, World's Fair Exhibit. $5,000,000. Walter Darwin Teague, 415 Madison Ave., New York, designer.

▲ **Tex., San Antonio**—American Telephone & Telegraph Co., 195 Broadway, New York, N. Y., and Southwestern Bell Telephone Co., 105 Auditorium Circle, San Antonio,

MICROWAVE RADIO RELAY ROUTE, San Antonio to Laredo, incl. six 140/350 ft. steel towers, $2,500,000.
ANTENNA, on top existing So. B. Tel Bldg., $350,000.
ENLARGEMENT RADIO RELAY STATION Seguin, $150,000.
RADIO RELAY STATION, Floresville, $175,000.
RADIO RELAY STATION, Pleasanton, $175,000.
RADIO RELAY STATION, Hindes, $175,000.
RADIO RELAY STATION, Cotulla, $175,000.
RADIO RELAY STATION, Encinal, $175,000.
RADIO RELAY STATION, Laredo, $175,000.

PUBLIC BUILDINGS

▲ **Ind., Speedway (Br. Indianapolis)**—Speedway School Bldg. Corp., 5151 W. 14 St., Indianapolis, plans by Everett I. Brown Co., Illinois Bldg., Indianapolis, HIGH SCHOOL, SWIMMING POOL, Lynhurst and 25th Sts. $4,000,000.

▲ **La., New Orleans**—City, City Hall, plans by Mathes, Bergman & Assn., 929 Howard Ave., Zone 12, CULTURAL CENTER as addn. to Civic Auditorium. $18,500,000. CD 6/21/61.

▲ **Minn., Brainerd**—State Dpt. Admin., 19 State Capitol, St. Paul, plans by Toltz, King, Duvall, Anderson & Assocs., 1408 Pioneer Bldg., St. Paul, four 108-bed HOSPITALS, Brainerd State School and Hospital. $2,500,000. Bids June 1962. CD 6/23/61.

▲ **Mo., Rolla**—Curators University of Missouri, 116 Jesse Hall, Columbia, Mo., and Parker Hall, Rolla, Mo., LIBRARY on Campus of School of Mines and Metallurgy, $1,000,000; AUDITORIUM-FIELD HOUSE $2,700,000.

▲ **N. J., Montvale**—Pascack Valley Regional School Dist., Piermont Ave., Hillsdale, referendum bonds and project Oct. 10, HIGH SCHOOL, Grand Ave. and Spring Valley Rd. $2,900,000. Sherwood, Mills & Smith, 65 Broad St., Stamford, Conn., archts. CD 6/26/61.

▲ **N. Y., Buffalo**—City, Municipal Bldg., Zone 2, two-level PARKING RAMP near War Memorial Stadium. $2,500,000.

▲ **N. Y., New York**—Bureau Constr., Bd. Educ., 45-12 Crescent St., Long Island City, Zone 1, Proj. E-61 Bronx VOCATIONAL HIGH SCHOOL ADDN., Cortland Ave. and 152 St., Bronx Boro. $4,300,00. Constr. 1962. CD 11/29/54.

▲ **O., Steubenville**—Steubenville Metropolitan Housing Auth., 1401 Parkview Circle, 300 unit, low-rent HOUSING, $5,077,658. CD 1/4/60.

▲ **Okla., Sand Springs**—Bd. Affairs, Capitol 5, Oklahoma City, plans by McCune, McCune & Assocs., Utica Sq., Tulsa, HISSOM MENTAL HEALTH CENTER, $7,000,000. Curry Engineering Co., 1116 Walnut St., Muskogee, consult. engr.

COMMERCIAL BUILDINGS

▲ **Calif., San Jose**—Stone & Schulte, 1745 W. San Carlos, plans by Welton Becket & Assocs., 153 Maiden Lane, San Francisco, Seventrees SHOPPING CENTER, 30-acre. $7,000,000. Constr. to start this fall.

▲ **Fla., Miami Beach**—Bay Terrace Assocs., c/o Smith & Korach, archts., 721 NW 21st Court, Miami, APPARTMENT, West Ave. between 12 and 13 Sts. $4,000,000.

▲ **Fla., Winter Park**—J. B. Ivey Co., 127 North Tryon St., Charlotte, N. C., c/o S. S. Jacobs Co., Independent Life Bldg., Jacksonville, 100,000 sq. ft. SHOPPING CENTER, Hy. 17-92 between Canton and Webster Avenues. $5,000,000.

▲ **Ill., Chicago**—George S. Lurie Co., Jerrold Wexler, in charge, 120 S. LaSalle St., Zone 3, plans by Hirschfield, Pawlan & Reinheimer, 327 S. LaSalle St., Zone 4, 31 story, 900 unit APARTMENT, Randolph St. and Lake Michigan St. $25,000,000. CD 8/5/60.

▲ **Ky., Louisville**—Martin L. Adams & Sons, 512 W. Ormsby Ave., plans by Edward W. Augustus & John Doumas, 135 Breckenridge Lane, 242 unit, 23 story aluminum and glass APARTMENT, 2 and Chestnut Sts. $4,250,000.

▲ **Mich., Detroit**—First Federal Savings & Loan Assoc., 751 Griswold St., OFFICE, Woodward and Michigan Aves. $10,000,000. Constr. possibly 1961.

▲ **Mo., Lemay (St. Louis 25 P.O.)**—May Co., 601 Olive St., St. Louis, Zone 1, plans by Victor Gruen Assocs., 135 S. Doheny, Beverly Hills, Calif., Lemay Center REGIONAL SHOPPING CENTER, incl. 3 level Department Store for Famous-Barr; other STORE and SHOP totalling 450,000 sq. ft., building areas, parking areas, access roads, etc. Lemay Ferry, Union and Forder Rds. and Lindbergh Blvd. $10,000,000. Bids 1962-1963. CD 4/13/61.

▲ **Mo., St. Louis**—Traco Skinker Corp., c/o Elliott Bergfeld, 18 S. Kingshighway, Zone 8, plans by Robert Elkington, 7916 Kinsbury, Clayton 5, Mo., Lundgren & Mauer, 1203 W. 6, Austin Tex., and S. J. Kessler & Sons, 598 Madison Ave., New York, N. Y., 22 story, bsmnt., 55x170 ft brick, steel, concrete APARTMENT incl. bsmt. and GARAGE exten., 6211 Rosebury Ave., $3,000,000. Wells & Wells, Inc., Security Bldg., St. Louis 2, Mo., consult. engrs.

▲ **N. Y., New York**—First National Realty & Constr. Corp., 630 Third Ave., Zone 17, plans by Horace Ginsbern & Assocs., 205 E. 42 St., Zone 17, 35 story Mayfair West APARTMENT, 15 W. 72 St. at Central Park West. $15,000,000. Farkas & Barron, 5 Beekman St., Zone 38, N. Y., struct. engrs. Mayer Assocs., 110 E. 30 St., Zone 16, mech. engrs.

▲ **N. Y., New York**—Raymax Assocs., 469 Seventh Ave., New York, Zone 18, plans by Henry G. Greene, 855 Sixth Ave., New York, Zone 1, 15 story APARTMENT, 265 W. 15 St. $3,000,000.

▲ **O., Mentor**—DeFranco Constr. Co., 5570 Meister Rd., 100 addnl. HOMES, Deena's Half Acres, $3,000,000.

▲ **Va., Alexandria**—Bryan Gordon Assoc., 4613 Duke St., Alexandria, plans by Vosbeck & Ward, 1077 West Glebe Rd., 350-unit APARTMENT, near Shirley-Duke Shopping Center. $4,000,000; BOWLING ALLEY, vicinity of Jordan and Duke Sts. $500,000.

▲ **Alta., Calgary**—Penthouse Towers Apartment Hotel Ltd. c/o A. Dale & Assocs., archts., 1026 16th Ave. N.W., 21 story, 150 x 230 ft. HOTEL and COMMERCIAL BLDG. $3,750,000.

▲ **Alta., Calgary**—Western Hotels, Inc., and Marwell Constr. Co., Ltd., 1500 W. Georgia St., Vancouver, B. C., plans by Reno Negrin, 5346 Knight St., Vancouver, B. C., 9 story, 200 room concrete HOTEL, indoor swimming pool, banquet facilities, restaurants, multi-level parking, $4,000,000. O. Safir & Co., Ltd., 525 Seymour St., Vancouver, B. C., consult. engrs. CD 7/5/61.

▲ **B. C., West Vancouver**—Ivory Towers Ltd. c/o Chomick & LeBlond, archts., 1349 Lonsdale Ave., 12 story, concrete APARTMENT, south of Upper Levels Hy. between Capilano River and Taylor Way, $4,000,000.

INDUSTRIAL BUILDINGS

▲ **Ill., Joliet**—Commonwealth Edison Co., 72 W. Adams St., Chicago, Zone 2, 560,000 kw GENERATING STATION, $89,600,000. BA 1965.

▲ **Ill., Lockport**—Commonwealth Edison Co., 72 W. Adams St., Chicago, Zone 3, 510,000 kw. Will County GENERATING STATION, $81,600,000. BA 1962-1964.

▲ **Ill., Waukegan**—Commonwealth Edison Co., 72 W. Adams St., Chicago, Zone 3, 305,000 kw GENERATING STATION, (2nd Unit) $58,800,000. BA 1962/1964.

▲ **Ind., Hammond**—Commonwealth Edison Co., 72 W. Adams St., Chicago 3, Ill., STATELINE GENERATING STATION (2nd unit) 305,000 kw $48,800,000. BA 1962-1964.

▲ **La., New Orleans**—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y., addn. anhydrous ammonia Fortier PLANT, 20 mi. north of here. $3,000,000. CD 1/18/54.

▲ **La., St. Francisville**—St. Francisville Paper Co. (Crown-Zellerbach Corp., 343 Sansom St., San Francisco, Calif. and Time Inc., Time & Life Bldg., New York, N. Y.), PAPER MILL ADDN. $25,000,000.

▲ **N. Y., Lackawanna**—Bethlehem Steel Co., Bethlehem, Pa., 200,000 tons per year GALVANIZING MILL, Lackawanna Works. $40,000,000. CD 1/31/56.

▲ **O., Omal (Hannibal P.O.)**—Olin Mathieson Chemical Corp., 260 Park Ave., New York 22, N. Y., 36,000 ft. MILL BUILDING, 66 in. cold rolling mill to produce bright finished sheet aluminum.

▲ **Ore., Wauna**—Cerro Corp., 300 Park Ave., New York, N. Y. ALUMINUM REDUCTION PLANT, $30,000,000. Site change. CD 6/21/60, under Wash., Longview as project location, and United Pacific Aluminum Corp., as owner.

▲ **Tex., Houston**—Reed Roller Bit. Co., 6501 Navigation Blvd., PLANT, $4,500,000.

▲ **Mo., St. Louis**—St. Louis University, 221 N. Grand Blvd., Zone 3,
plans by Drake-O'Meara Assocs., 212 S. Bemiston, Clayton 5, Mo., 17 story Men's DORMITORY, 3630 W. Pine Blvd., $2,520,000, Bids Sept. 1961;
plans by Sverdrup & Parcel & Assocs., Inc., 915 Olive St., St. Louis 1, Mo., SCIENCE and ENGINEERING BLDG. east of Grand Blvd. adjacent to Pine St., $2,000,000; Busch Memorial CENTER incl. union facilities, public meeting halls, etc. east of Grand Blvd. adjacent to Laclede Ave., $2,550,000. Bids early 1962. CD 12/19/55.

▲ **O., Columbus**—Ohio School Employees Retirement System, 12 N. 3rd St., plans by Kellam & Foley, 1621 W. 1st Ave., 12 story MOTOR HOTEL, OFFICE, 270 car parking, Gay and 3rd Sts. $7,000,000. CD 7/5/61.

▲ **N. Y., New York**—86 St. and Second Ave. Holding Corp., 44 Court St., Brooklyn, plans by Slingerland & Booss, 342 Madison Ave., Zone 17, 20 story APARTMENT, GARAGE, 300-34 E. 87 St. at Second Ave. $7,000,000. I. M. Robbins & Assocs., 342 Madison Ave., Zone 17, mech. engrs. CD 2/15/61.

▲ **O., Cincinnati**—Mabley & Carew Co., Div. Allied Stores, Inc., 5th and Vine Sts., plans by A. M. Kinney, Inc., 2912 Vernon Pl., comb. two DEPARTMENT STORES, interior alterations, first to ninth floors, air conditioning, elevators, 5th and Vine Sts. $4,000,000. Malcomb Beattie, 401 5th Ave., New York, N. Y., stf. engr. Bids late summer 1961. CD 10/14/60.

▲ **O., Cincinnati**—Sisters of Mercy, 2200 Victory Parkway, plans by Laurens P. Cotter & Assocs., 3329 Glenmore Ave., 350 bed HOSPITAL, Cooper and Reading Rds. $8,000,000. CD 8/24/53.

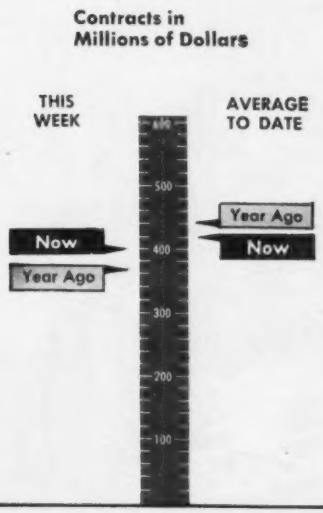
▲ **Tex., Dallas**—Texas Presbyterian Foundation, 2006 Bryan St., plans by Roscoe DeWitt, 2025 Cedar Springs Rd., 350 bed HOSPITAL. $7,500,000. CD 6/26/61.

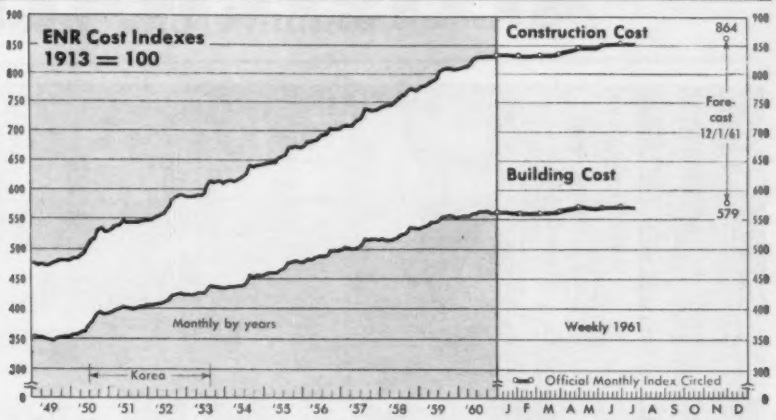
For additional reports see CONSTRUCTION DAILY NEWSLETTER

(Proposal Advertisements see pp. 72 to 74)

Construction Scoreboard

This Week . . .




ENR Cost Indexes 1913 = 100
Construction Cost
864
Fore-cast 12/1/61
Building Cost
579
Monthly by years
Weekly 1961
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 '60
J F M A M J J A S O N D

ENR INDEXES (1913=100), 20-cities' average	Week of July 20 1961	% Change from June 22 1961	% Change from July 21 1960
Construction Cost	853.88	+0.2	+2.8
Building Cost	571.24	+0.04	+1.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

Contracts Awarded In 50 States By Type	This Week millions	Cum. 30 wks 1961	Chge '60-'61 %
All Heavy Construction	$399.7	$12,812.9	− 2
By Ownership			
PRIVATE	170.8	6,197.9	−11
PUBLIC	228.9	6,615.0	+ 8
State & Municipal	195.3	4,990.4	+ 7
Federal	33.6	1,624.6	+ 9
By Type of Work			
PUBLIC			
Waterworks	4.0	222.9	−23
Sewerage	11.0	419.5	+18
Bridges*	25.7	382.0	−16
Highways	94.0	2,185.0	+14
Earthwork, Dams & Waterways	6.8	526.7	+10
Buildings:			
Excl. Housing	48.3	1,570.9	+11
Housing	19.2	507.5	+42
Unclassified	20.0	800.9	−10
PRIVATE			
Buildings:			
Mass Housing	92.2	2,790.5	−17
Commercial	43.6	1,506.7	+ 4
Industrial	26.3	1,642.9	+ 4
Unclassified	8.6	257.4	−54

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of July 20 millions	Cum. 29 wks 1961	Chge '60-'61 %
Corporate Securities	$ 42.2	$2,009.9	+16
State and Municipal:			
All Except Housing	90.4	3,882.5	− 1
Housing	51.2	82.5	−55
Federal Loans	0	183.7	+74
Federal Aid	0	0	−100
Total Nonfederal	$183.8	$6,158.5	−29
Federal Appropriations:			
Projects in U. S.	0	1.0	−99.9
Outside U. S.	0	0	−100
Total New Capital	$183.8	$6,159.5	−38

Latest Month . . .

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	1961 (millions)	Percent Change from last Month	Percent Change from last Year
Total U. S. (ENR reported)	$125,107	+0.1	+2.0
By Ownership—			
Private	56,606	+0.4	+2.9
State & Municipal	54,652	+0.2	+2.0
Federal	13,849	−1.4	−1.5
By Type of Work—			
Waterworks	3,128	+1.5	+8.2
Sewerage	4,268	+0.7	+9.7
Bridges	3,244	−1.1	−3.0
Highways	13,284	−0.7	−3.2
Earthwork, Dams and Waterways	11,986	−0.1	+1.1
Public Buildings	22,818	+0.2	+3.1
Industrial Buildings	17,450	−0.03	−1.4
Commercial Buildings	28,293	+0.5	+6.3
Unclassified, Private	10,863*	+0.8	+2.0
Unclassified, Public	9,773	−0.7	−0.8

* Includes Private Bridges, $101 million

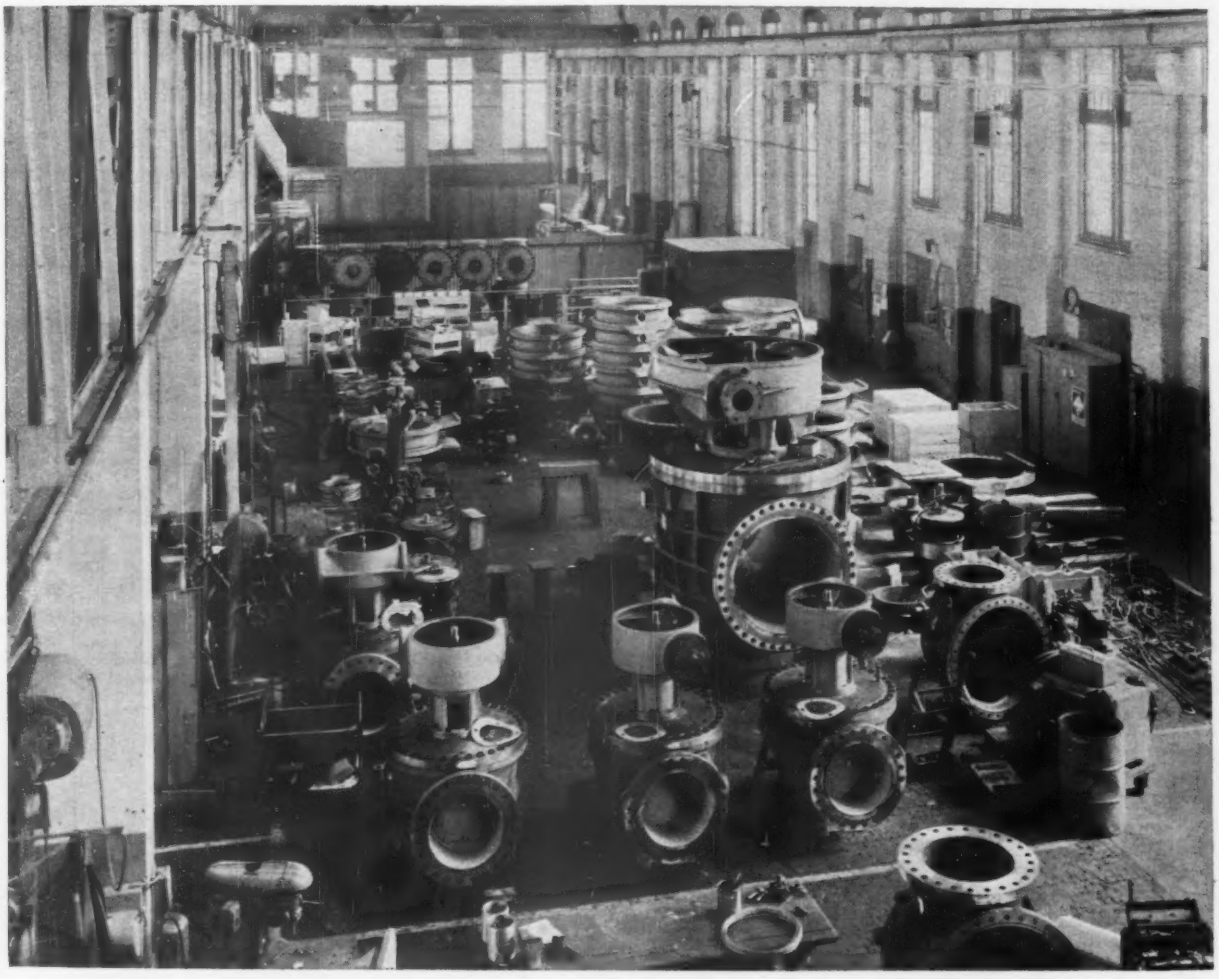
FLOW OF NEW PROJECTS INTO THE BACKLOG

	1961 June (millions)	1961 6-months (millions)	Percent Change from 1960 June	Percent Change from 1960 6-Mos.
Total U. S. (ENR reported)	$1,778	$10,537	+10	−14
By Ownership—				
Private	825	5,876	−24	−16
State & Municipal	920	4,271	+84	− 8
Federal	33	390	+14	−44
By Type of Work—				
Waterworks	89	443	+242	+125
Sewerage	96	455	+134	+40
Bridges	15	158	+88	+ 6
Highways	109	677	+28	−56
Earthwork, Dams and Waterways	148	296	+492	+169
Public Buildings	441	2,335	+38	−0.2
Industrial Buildings	177	1,764	−26	− 4
Commercial: Mass Housing	272	1,703	−18	−47
Other Building	259	1,903	−31	+21
Unclassified, Private	117	506	−14	+31
Unclassified, Public	55	297	+129	−84

FLOW OF PROJECTS OUT OF THE BACKLOG INTO CONTRACTS

Total U. S. (ENR reported)	1,146	5,671	−21	+0.2
By Ownership—				
Private	354	2,215	−42	− 2
State & Municipal	574	2,559	+0.3	+ 5
Federal	218	897	−17	− 7

ALLIS-CHALMERS



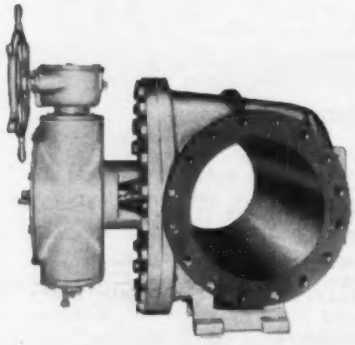
Another shipment of "habit-forming" valves

built for performance that always captures repeat customers!

Here we see one small part of the latest shipment of Allis-Chalmers valves destined for a long-time customer. These units will augment hundreds of A-C valves already installed in the same western metropolitan water system, many of them tracing satisfactory service back a quarter of a century!

Shown are four 300-lb, 24-in. *Rotovalve* units (two motor-operated, two manual) . . . a 48-in. cast-steel *Rotovalve* for 300 psi (motor-operated) . . . and several butterfly valves of the 136 ordered (all rubber-seated, motor-operated, ranging in size from 12 to 48 inches).

Allis-Chalmers offers today's only complete, perpetual rotary-valve stocking program, assuring you fastest delivery, thanks to "off-the-shelf" availability. For help anytime, contact your nearby A-C valve representative, district office, or simply write to **Allis-Chalmers,** *Hydraulic Division, York, Pa.* A-1395



The ROTOVALVE is probably your best all-round buy in a valve. Wide open it has no more resistance to flow than a straight piece of pipe of equivalent length. Actually seats itself tighter with use. *Rotovalve* **is an Allis-Chalmers trademark.**

Timetable Charts Road Progress

Connecticut's Highway Department knows where it's going. It also believes the highway-user and general public should know. To this end the Department distributed a comprehensive outline of highway construction plans for the four-year period July 1, 1961 to June 30, 1965.

Copies of the 16-page report, which will be updated and distributed each quarter, went out last week to 270 newspapers, magazines, radio and television stations, and libraries.

The publication is the brainchild of Howard S. Ives, the state's highway commissioner since 1959. Mr. Ives and the administration of Gov. John Dempsey know that full information is good public relations. Both believe this is one of the best ways of getting the public support necessary for the physical and financial advancement of a highway program.

Although basically a public education operation, the quarterly reviews will also serve the roadbuilding contractor. One quick look will tell interested contractors the status of any project in the program. Right now, however, the Highway Department wants the report in the hands of central sources of information, so state contractors must wait before copies become available to them.

A heavy demand by the industry could result in wider distribution, but the additional printing wouldn't be too great a strain on the Department budget. The report is a highly legible, but inexpensive offset printing job.

Individual projects are detailed on 13 pages, each measuring 17 by 11 in. (see sample page). Projects are classified as to type: expressway system—Interstate and non-Interstate; federally aided primary, secondary or urban routes; non-federally aided projects; special projects for which bonds were specifically authorized or appropriations made. Generally, the latter consist of projects that will eliminate hazardous conditions at specific locations. The report details 175 projects ranging in estimated cost from $10,000 to $20 million each.

Report pages contain the following information:

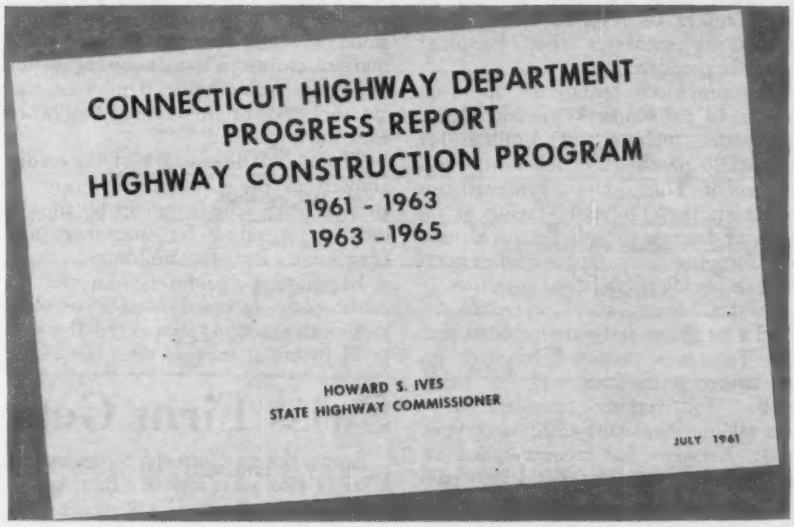
- Number assigned to each project.
- Community where project is located.
- Type of financing.
- Description of project.
- Percent of project progress in bar graph form ranging from "planning" through "survey," "design," "rights-of-way" and "construction." Rights-of-way percentage is related to the number of parcels actually purchased and does not reflect title-search and appraising already completed.
- Anticipated date of advertising for bids.

The last page contains a map of the state showing route locations coded as to type of project.

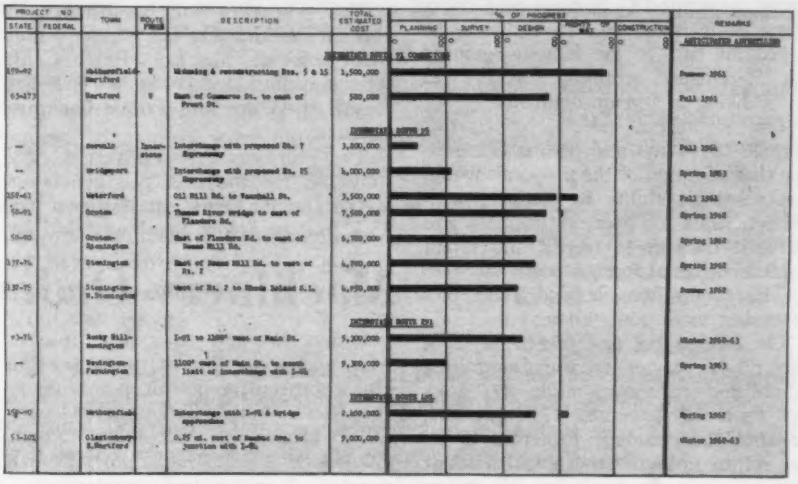
The program will involve estimated expenditures totaling $580.3 million. It combines remaining construction of the $484-million program authorized by the 1959 legislature and the $150-million one authorized by this year's session. The total dollar volume includes federal aid.

The first quarterly report excludes projects already under contract and financed by earlier bond issues, appropriations, or federal grants. It deals only with jobs that will be contracted from this summer onward. Neither does the report include non-federal projects beyond July 1, 1963. Project-financing beyond July 1, 1963 rests with that year's legislature.

Each of the projects listed will be under contract by June 30, 1965.



PLAIN WRAPPER on Connecticut's highway timetable conceals . . .



. . . **HOT INFORMATION** on how, what, why, when and where.

Tax-Law Writers Heed Industry's Pleas

Congress keeps fanning the hopes of those who want a tax measure passed this year. It does so by radically revising more to the liking of business the huge bundle of revenue-raising, loophole-closing measures that President Kennedy proposed.

The provisions tentatively approved thus far by the House Ways and Means Committee include a $1.1-billion tax cut tied to purchases of machinery and equipment. They exclude, however, two Administration proposals—taxing of income of foreign subsidiaries as earned, and clamping down on companies operating in so-called tax haven countries.

On tax havens, the Committee decided a lot more study would be needed. The Treasury's proposed language on tax haven restrictions will be made public "for further consideration"—thus stalling the issue until next year.

Mr. Kennedy has recommended an end to the present law that allows payment of U. S. tax on earnings of foreign subsidiaries only when dividends are paid to the parent company. Instead, he wanted U. S. taxes paid on income as it is earned. In addition, he urged an end to tax benefits granted U. S. citizens working abroad, and those living in foreign countries.

On all these points, contractors warned the Ways and Means Committee that adoption of the proposals would hamper their ability to compete with foreign firms for overseas business and make it difficult to recruit and retain top executives at foreign posts.

The Committee heeded such protests, but made some changes.

On foreign tax credits against U. S. income tax payments, the Committee would require a corporation to "gross up" its foreign income. This, in effect, requires the company to report in its tax return not only the actual amount received as a dividend, but also what the dividend would have been before deduction of the foreign income tax.

Under present law, the taxpayer takes the foreign tax credit against his income after deducting the foreign tax.

Construction officials working abroad for 17 out of 18 months will not lose the present tax benefits, since the Committee rejected the Administration proposals. The President wanted to end the present exemption on the first $20,000 of income earned abroad.

For Americans who live abroad permanently, thus totally exempt from U. S. income tax, the Committee decided there should be a dollar ceiling on the exemption. The ceiling would apply to both developed and underdeveloped countries. The precise amount was not fixed immediately, but $35,000 was discussed.

Corporations operating overseas subsidiaries would have to file new information returns on transfer or acquisition of foreign corporations. Under existing law such returns are required only when they are organized.

The $1.1 billion worth of tax credits allowed in the Committee version of the incentive scheme would be allowed only on spending for machinery and equipment, not for buildings.

Eliminating buildings from the tax credit plan stemmed from a previous Committee action; it rejected the proposal to tax at income rates the difference between depreciated costs and actual cost when property is sold.

The differential is now taxed at the capital gains rate. Having favored construction interests on this count, the Committee decided against adding more benefits to a system already considered excessive by the Administration.

The tax credit plan would allow a contractor to deduct 8% of the cost of new equipment and machinery; up to $50,000 worth of used machinery can qualify. In addition, the Committee allowed the credit to be as much as 50% of a company's tax liability, instead of the Administration's recommendation of 30%. To qualify, the machinery and equipment must have a life of six years or more.

Swiss Firm Gets Turbine Job

Brown-Boveri Corp. of Switzerland—a target two years ago of "Buy American" protest from U. S. equipment manufacturers—won an $8.8-million contract for two turbine-generator units.

The generators will be installed in the $63-million Haynes steam power plant under way near Long Beach, Calif. The awarding agency is Los Angeles Board of Water and Power Commissioners.

Two years ago Brown-Boveri successfully bid for the first two generators at the Haynes plant. Its bid then was $5.5 million below the lowest bid by a U. S. company, General Electric. Award of the contract to the Swiss firm brought protests from domestic corporations. After hearings by both the Water Board and the City Council, the award was upheld on the basis of Los Angeles' city charter. It specifies public agencies buy from the lowest qualified bidder, regardless of nationality.

In last week's competition, the lowest bid by a U. S. firm was $10.3 million from Allis-Chalmers Mfg. Co. of Milwaukee.

The Haynes project is scheduled to start operations in September 1962.

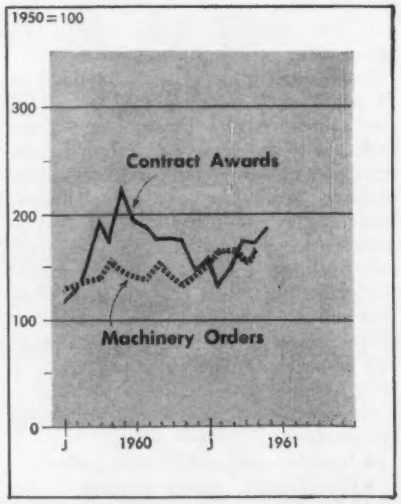
Machinery Orders Inch Up

Orders for new equipment rose in May and topped a year ago for the tenth consecutive month, according to the McGraw-Hill Economics Department's Index of Machinery Orders. The index is based on reports from a number of cooperating manufacturers.

Although still running ahead of last year and 9% ahead of April, May's index of 165 marked another sharp cut in the margin of increase. (The index is based on 1950 as 100.) The May value was only 1% ahead of May 1960, while April's reading of 152 was 6% above April 1960. The five months' average of 161, however, tops last year by 12%.

The new orders index this year moves a lot closer to ENR's Construction Contract Award Index (see chart). During 1958-'60, the orders index dropped well below contracts.

The gap is closing, because orders are up, while contracts are slightly behind last year. For the five months the contract index averages 159, also based on 1950 as 100.



Read this amazing comparison between Air Compressors. It's worth thousands of dollars to know

	Compressor "J"	Compressor "X"
Compressor Rating, Cfm	900	900
Hammer Operated	Vulcan #0	Vulcan #0
Blows per Minute	65 constant	58 only at max.
Gauge Pressure, Psi	105 constant	100 only at max.
Engine Speed, Rpm	1500 constant	900 to 2000 variable

JOB PROBLEM: Driving 85′ long, 10″ diameter cylindrical piles for a large steel mill foundation.

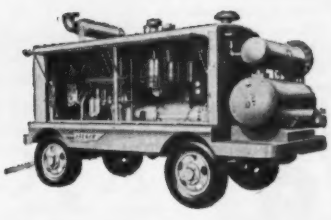
PROCEDURE: Contractor elected to drive with two Vulcan #0 single acting hammers rated at 50 blows per minute, requiring a minimum of 841 cfm of air @ 100 psig for peak performance. For power, he chose two "900" compressors of leading makes, one being a Jaeger 900 Roto Air Plus.

PERFORMANCE: The Jaeger, when driving, maintained a uniform constant speed of 1500 rpm and uniform gauge pressure of 105 psig. The hammer delivered 65 blows per minute with hammer air control valve only partially opened. (When approaching refusal, 20 blows were needed per inch of penetration.)

The other compressor, when driving, operated at surging speeds from 900 to 2000 rpm. It never maintained a working pressure above 100 psig. The hammer never delivered more than 58 blows per minute. (Manufacturer's service men, on this job, made several adjustments in the variable speed control but were unable to smooth out the speed.)

POSITIVE PROOF: To double-check this observed difference in performance, the contractor changed over the air lines from his compressors to the opposite hammers. *The Jaeger "900" gave the same superior performance with the other hammer as it had done with the first. The performance of the second compressor was not improved.*

PAY OFF TO YOU: On any job requiring 75 cfm to 900 cfm of air, a Jaeger Roto Air Plus will maintain steady full pressure at slower engine speed, using less fuel and with less wear on engine and compressor than any other rotary vane compressor using a comparable engine. A Jaeger saves you money. *On big air jobs you save big money.* Let your Jaeger distributor prove this. Ask him.



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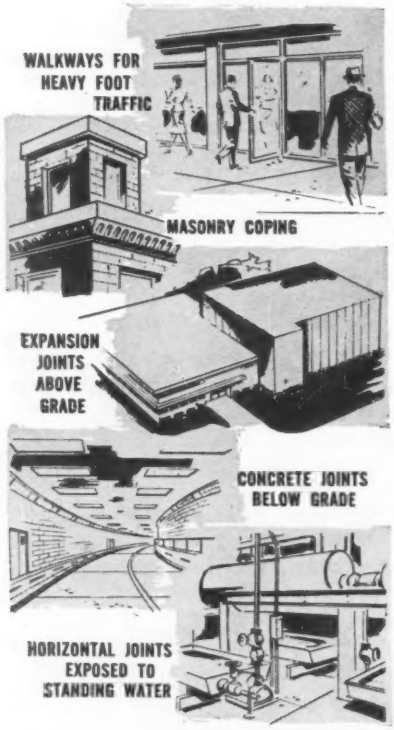
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Rate of June Home Starts Best Since December '59

Private housing starts perked up sharply in June.

The seasonally adjusted annual rate jumped to 1,374,000 units in June, highest since December 1959, according to the Bureau of Census. The rate also topped May's 1,169,000 by 6%.

The Bureau also reported generous downward revisions in the annual rates estimated for February through April. New rates are February, 1,169,000; March, 1,296,000; April, 1,166,000.

Actual number of private housing starts in June was 131,400 units, nearly 8% above June 1960. Last month was the second one this year to top the year ago figure. March topped the March 1960 total, which was depressed by severe weather conditions.

For the first six months, private housing starts are estimated at 619,700 units. The total trails last year by less than 20,000 units, or only 3%. The half-year figure, however, is 154,200 units below the record 1959 total for January through June.

Expanded Use Predicted For Metal Curtain Walls

The use of metal curtain walls, which cover 15% of the total wall area of office buildings, schools, hospitals and other non-residential buildings erected last year, will rise to 25% by 1963. That's the forecast of a market study by Olin Mathieson Chemical Corp.

The wall areas cited do not include corrugated siding and other formed panels without framing used to sheath industrial buildings. Major materials in metal curtain walls include porcelain-enameled steel, stainless steel, aluminum (including anodized), porcelain-enameled aluminum and glass.

The trend toward more fully integrated metal panel walls and partitions, with insulation, heating pipes, electrical wiring and plumbing built into the panels, will continue. Eventually, metal walls and partitions will invade the housing market, says Olin Mathieson.

Ten years ago there were less than a dozen companies manufacturing metal curtain walls; four years ago there were 40; today there are 110 companies. Last year they installed about $500 million "in place" value. This should rise to $800 million in 1963.

Accompanying the rising volume has been a decreasing unit cost. The average wall cost for six new metal-faced buildings in New York City was $9.47 per sq ft in 1957. Today the average unit cost is $6.50, a 30% drop.

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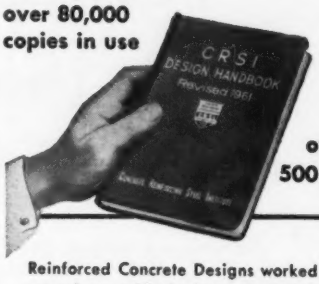

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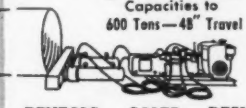

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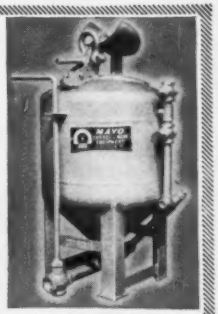

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BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

news and notes from the field

THE HIGH COST OF MIXING WATER

Careful job-site control of mixing water is essential for getting the best results in all types of concrete construction. Too much mixing water is a danger recognized by most construction men, and unfortunately the real damage resulting from excess water often shows up too late to be remedied without extensive costs.

Examples of Delayed Damage From Too Much Mixing Water

1. Cracks in foundations—Foundation walls and floors crack excessively from high shrinkage and low tensile strength caused by excessive mixing water.

2. Freeze-thaw damage in pavements—Air is entrained in concrete to protect it from freezing and thrawing damage. When the slump is greater than 5 inches, there is danger of the air content decreasing which reduces this important protection.

3. Sand streaks in foundations—excess water bleeds up the sides of forms, washing out the cement paste, and leaving a streaked, raw, unattractive wall surface.

4. Dusting floors—as concrete bleeds, water comes to the surface. If there is excessive bleeding, the water brings aggregate fines to the surface which often cause dusting and crazing.

5. Leaky walls and wet floors—Both can result from excessive voids in concrete caused by too much water.

The Water/Cash Ratio

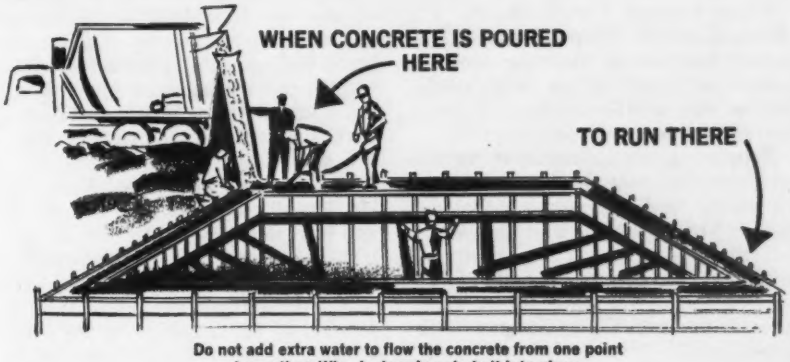
Much has been said and written on the subject of controlling the amount of mixing water, here it is expressed in terms everyone understands: money. To change a typical mix from a 2-inch slump to a 9-inch slump by adding water costs as much as $7.50 per 5-yard load if the strength is maintained. Here's why:

1-In. Gravel Mix, W/C = 6 Gal./Bg. (4000 psi)

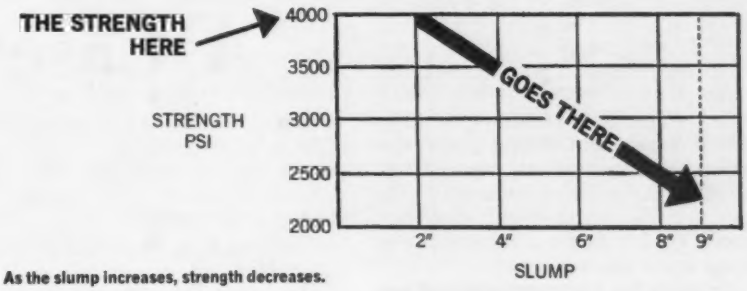
Total water used for 2-in. slump: 30 gal.
Total water used for 9-in. slump: 39 gal.
39 gal. − 30 gal. = 9 gal. excess water added

Required Cement for 6 Gal. W/C Ratio

2-in. slump, 30 ÷ 6 = 5 bags of cement needed
9-in. slump, 39 ÷ 6 = 6½ bags of cement needed



Do not add extra water to flow the concrete from one point to another. Wheel, shovel or chute it into place.



As the slump increases, strength decreases.

6½ bags − 5 bags = 1½ bags additional cement needed to maintain the 4000 psi strength

Extra Cost of 9-In. Slump Per Yd., 4000 psi Concrete

Extra cement costs
Approx. $1.50 per yard
In other words, the extra water costs
$7.50 per 5-yard load
or .....$ .17 per gallon
(figures are approximated)

The cost of mixing water should never be underestimated. Repairs to the structure and damage to the contractor's reputation can be far-reaching and costly . . . it's at this point where the water/cash ratio comes into being—is most easily recognized.

Concrete Has a Bright Future

Concrete is one of the most flexible and widely used of all construction materials. Based on recent advances and the growing trend in design and construction, concrete will continue to grow in favor among engineers, architects and customers. This is why Alpha is promoting these helpful tips on concreting as a continuing program to help improve concreting practices.

Reprints of this information are available free of charge. Contact your local Alpha Representative or write to Alpha's home office.

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The Bell Tolls This Year for Situs

The chances of any federal action this year on the situs picketing bill—or any other labor legislation sought by the building trades unions—appeared to be buried last week.

Adam Clayton Powell (D., N. Y.), chairman of the House Labor Committee, has warned that the building trades can expect to get little legislation as long as they continue to practice discrimination against Negroes.

Speaking in Philadedphia at the annual convention of the National Association for the Advancement of Colored People, Mr. Powell said that he "will do everything in my power to prevent any legislation favorable to the craft unions from coming out of our committe until these craft unions get in step with democracy."

Mentioning the situs picketing bill in particular, Mr. Powell said neither he nor the majority of the committee would have the "slightest interest" in the bill until the building trades start practicing "common equality for black workers."

C. J. Haggerty, president of the AFL-CIO Building and Construction Trades Department, immediately charged Mr. Powell with "political blackmail." He said he was "astonished" that Mr. Powell would use his chairmanship as a civil rights lever.

Although Mr. Haggerty professed surprise, he must have seen the handwriting on the wall.

Back in March, Mr. Powell, through an assistant, told delegates to the building trades' Legislative Conference that it is hypocritical to talk about the basic right to strike at a construction site without recognizing the right of Negroes to work at the site.

"Let every man have not only the right to picket on the site but to work on the site," he said.

"The rights of all labor and the right of all laborers are inseparable," he added. "Each has a common destiny. Believe me, brother, you can't have one without the other."

In his latest attack on the building trades, Mr. Powell listed seven unions as the principal offenders: electrical workers, operating engineers, carpenters, iron workers, plumbers, plasterers and lathers.

Total exclusion exists in some cases, he said. And where it does not exist, Negroes are generally the last hired, the first fired and lowest paid, he charged.

Mr. Powell also lashed out at the government on two fronts—apprenticeship and failure to enforce the ban against the closed shop.

He said the government is subsidizing discrimination by encouraging and developing apprenticeship training programs for unions that refuse to allow Negroes to participate. He charged that the National Labor Relations Board is derelict in failing to enforce the closed-shop ban of the Taft-Hartley Act.

Mr. Haggerty, in a heated reply, said Mr. Powell's charges are "not in accord with the facts."

He "assumed," however, that discrimination may exist in some unions at the local level. But this, he said, is in violation of the mandates of the international unions, which are powerless to do much about it, because of local autonomy.

Mr. Powell's latest blast hit the building trades just when their hopes for favorable action on the picketing bill began to rise.

Earlier this month, the Building Trades Department pointed to two recent developments that had tended to overcome their pessimism:

- The U. S. Supreme Court considerably undermined industrial union objections to the bill when it decided the General Electric Appliance Park case in June. The court said the Denver case does not bar picketing in a common situs situation at an industrial plant if the work performed by the secondary (outside) employer is necessary to the normal operations of the primary (plant) employer. Such work, it said, includes routine maintenance work.
- Testimony before the McClellan committee showed that much of the

A Case of More Bark

Union limitations on management's right to subcontract are not so prevalent or rigid as some may think. And the list of unions that negotiate restrictions on subcontracting includes the building trades as well as the industrial unions.

The Labor Department's Bureau of Labor Statistics has taken a look at 1,687 labor contracts in effect in 1959. The contracts represent virtually all the major agreements then in existence.

The Bureau found that only 378 of the contracts, fewer than one-fourth, had any restrictions on subcontracting.

Four agreements prohibited the practice outright. Only 137 restricted the contracting out of construction, maintenance and installation work. The rest were concerned with the subcontracting of production work.

The use of these restrictive clauses by industrial unions has been a sore point with the building trades. And the industrial unions, on the other hand, have been equally disturbed by the building trades' promotion of maintenance by contract. The promotion has occurred through the Construction Industry Joint Conference and through development of a standard maintenance agreement to which 14 of the building trades have subscribed. The AFL-CIO has so far been unable to solve the jurisdictional conflict.

Most of the clauses relating to construction and maintenance were found in manufacturing industries.

The construction clauses were generally aimed at preserving the job opportunities of in-plant workers.

The BLS study found, however, that the building trades were about as quick to resort to restrictive clauses for job protection as the industrial unions were.

For example, the teamsters, electrical workers (IBEW), laborers, carpenters, and operating engineers—presumably as in-plant unions in many cases—were among those that negotiated the 378 contracts that regulated subcontracting in one way or another. And they accounted for 118 (nearly one-third) of the restrictive clauses. The auto workers, steelworkers, oil and chemical workers were among the other participants.

The type of restrictions varied widely.

Some clauses prohibited subcontracting when qualified in-plant workers were on layoff or part time. Others required the employer to try to get its laid-off workers on the payroll of the subcontractor. Many simply required that the union be notified or consulted about the subcontracting.

In some cases, subcontracting was permitted where specialized equipment or skills were needed. A number of clauses reserved routine work for in-plant workers and allowed new or ma-

Picketing

missile delay has been due to non-labor factors. Labor disputes that do hit missile bases are now controlled by the President's new Missile Sites Labor Commission. Thus, the fears that the bill would disrupt the missile program, the Department said should "now be laid at rest."

These were the major issues that sidetracked the bill earlier this year.

In the meantime, Mr. Powell has introduced a bill to inject the issue of discrimination into apprenticeship and Davis-Bacon procedures.

The bill (H.R. 8219) would bar federal aid to any apprenticeship program that is in the slightest way tinged with bigotry. And it would bar the use of apprentices registered under discriminatory programs from working on federal construction projects unless they are paid full journeymen's wages.

Than Bite?

jor construction and repair work to be contracted out. Some permitted subcontracting to union contractors only.

In all, 1,309 labor contracts had no limitations on subcontracting. The question here, BLS said, is whether the absence of restrictions gives the employer a free hand in subcontracting. There is no clear-cut answer, but BLS noted that arbitrators have come up with three lines of reasoning:

- If management's right to subcontract is to be abridged, a specific clause would have to be written to that effect.
- Subcontracting is barred, although not specifically mentioned, when it would violate the recognition or seniority clauses or any other general provision of the contract.
- Even in the absence of a clause prohibiting subcontracting, there is an implied limit on subcontracting but not an absolute prohibition.

The Bureau noted that disputes over subcontracting are commonly considered subject to arbitration even in the absence of a specific agreement. It said that the U. S. Supreme Court upheld this view last year in the Warrior and Gulf Navigation Co. case.

BLS pointed out that the 1959 labor contracts preceded passage of the Landrum-Griffin law. The law's limitation on hot-cargo agreements may effect use of contracting restrictions, it said.

Labor in Brief . . .

- **Disclosure law**—A bill to tighten up the 1958 Welfare and Pension Fund Disclosure Act was unanimously approved last week by a House labor subcommittee. It requires more detailed reporting by administrators and gives the Labor Department power to investigate the accuracy of reports.

- **Employment bounds back**—Construction employment has staged a sharp comeback from its recently depressed levels. It rose by 220,000 in June—which is more than usual for the month—and hit 3,023,000. The figure is 46,000 above a year ago and exceeds all June levels except for 1956.

- **Tough assignments**—Two subcommittees of the President's Labor-Management Advisory Committee face the difficult task of recommending procedures for promoting "free and responsible collective bargaining" and "sound wage and price policies."

- **Strikes were down**—Strike activity in all industries declined last year to the lowest annual level since 1942, according to the U. S. Labor Department. Construction stoppages, however, were up slightly—773 in 1960, 771 in 1959.

- **Joint Appeals Board**—Contractors in the Des Moines, Iowa, Construction Council have set up a three-man board to study the merits of the Joint Appeals Board. "Something has to be done to curb the yearly building trades strikes," says council director Robert E. Farrell.

- **Training survey**—The General Building Contractors Association in Philadelphia has engaged a team from Pennsylvania State University to survey training needs of the building industry in the area. The survey is the first step in the association's plan to include education in its industry advancement program.

- **Raiding**—The AFL-CIO Executive Council has ordered the sheet metal workers union to abandon efforts to organize Carrier Corp. in Syracuse, N. Y. The council said the union is violating the federation's constitution by raiding the incumbent steelworkers union.

- **Pay for 40 at 30**—The Washington State Labor Council has just adopted a resolution calling for a 30-hour workweek at pay now received for 40 hours. It says a six-hour day is necessary in the construction industry to keep unemployment below 4% of the work force.

Congress Bars NLRB Speed-Up

The House killed President Kennedy's plan to reorganize the National Labor Relations Board last week with a vote of 231 to 179. As a result, unions and employers will continue to meet long delays in the handling of unfair labor practice charges.

The reorganization plan was designed to speed up the handling of labor cases that are now bogged down. It would have done this by allowing the Board to delegate its powers to panels, members, officers or employees, provided the Board retained the right of review.

The plan would have permitted the Board, for example, to delegate decision-making power in unfair labor practice cases to the 63 trial examiners. The Board would then have become an appellate body, reviewing the trial examiners' decisions on much the same grounds that the Supreme Court takes cases on appeal.

Under present procedure, which requires the Board to listen to all unsettled cases, however contentious, it takes about a year to wind up the average unfair labor practice case. The Board has about a year's supply of contested and unresolved complaint cases on hand. It is running about three months behind in its handling of representation cases. And the Board's caseload intake is about 23,000 a year.

Although labor endorsed the plan, employer opposition was strong. The gist of some of the arguments was that the plan allowed a dangerous delegation of power to subordinates who may be incompetent and that the Board should be abolished if it is incapable of doing its job.

The technical argument that congressional dissenters professed to be impressed by was that the plan accomplished a statutory change—which is a prerogative of Congress, not of the President.

The plan had been endorsed by NLRB members and by a labor-management-public advisory panel headed by Harvard Professor Archibald Cox.

Architect Liable for Damages

An architect is not an insurer of perfect plans. But his specifications should produce a structure reasonably fit for its intended purpose.

The nature of an architect's responsibility to an owner is discussed by a Pennsylvania court in a case involving the design of a rayon and weaving mill for Bloomsburg Mills, Inc.

Bloomsburg engaged Lacy, Atherton, Wilson and Davis, architects, to design the mill and to supervise its construction.

The plans included the construction of a twenty-year bonded roof over the weaving mill. To meet the needs of its industrial purpose, this portion of the building was to be air conditioned to maintain a constant temperature and a constant humidity. A built-up roof with a vapor seal was required by the mill to prevent leakage of moisture from the outside and condensation from the inside.

The owner claimed that the architects negligently submitted plans for a roof which contained an improper vapor seal, faulty drain flashings, and fiberglass insulation material that was inadequate for the use intended. It said the insulation material became saturated, soggy and inefficient within a short term of years, causing such high condensation on the inside of the ceiling of the building that the construction of a new and adequate roof became necessary in order to carry on the weaving process.

Bloomsburg brought an action against the architects to recover damages and was awarded a judgment in the amount of $18,645. The cost of erecting the original roof was $14,979 and the cost of erecting the new roof was $32,420, the amount of the judgment being the cost of constructing the new roof less the cost of constructing the original roof. This judgment was affirmed on appeal.[1]

The appellate court held that the evidence indicated that the architects were aware of the intended use of the building; that the problem of proper insulation was of paramount importance; that they recommended the use of insulating material which proved to be unsatisfactory; that this material would absorb and retain moisture, which fact was within their knowledge; that they made no previous tests of this material nor did they have any knowledge, specifically, of where it had been satisfactorily used for similar buildings; that they were aware that, unless the design and construction was such as to create and maintain an hermetically sealed envelope about the insulation material, moisture would infiltrate causing it to lose its insulating efficiency and function; that they did not specify in the plans that such a complete envelope or enclosure should be constructed; and, that in fact such was not done. The court held that such findings justified a conclusion that the architects were negligent in the performance of their work.

The court stated: "An architect is bound to perform with reasonable care the duties for which he contracts. His client has the right to regard him as skilled in the science of the construction of buildings, and to expect that he will use reasonable and ordinary care and diligence in the application of his professional knowledge to accomplish the purpose for which he is retained.

While he does not guarantee a perfect plan or a satisfactory result, he does by his contract imply that he enjoys ordinary skill and ability in his profession and that he will exercise these attributes without neglect and with a certain exactness of performance to effectuate work properly done. Henon v. Vernon, 1918, 68 Pa. Super. 608; 6 C.J.S., Architects, Section 19, (1937); 25 A.L.R. 2d 1086. While an architect is not an absolute insurer of perfect plans, he is called upon to prepare plans and specifications which will give the structure so designed reasonable fitness for its intended purpose, and he impliedly warrants their sufficiency for that purpose. Hill v. Polar Pantries, 219 S.Car. 263, 64 S.E. 2d 885, 25 A.L.R. 2d 1080."

(1) Bloomsburg Mills, Inc. v. Sordoni Construction Co., Inc., Lacy, Atherton, Wilson and Davis, 164 A. 2d 201, Supreme Court of Pennsylvania, Oct. 10, 1960.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids: August 29, 1961

City of Hallandale, Florida Sanitary Sewerage Improvement No. 1

NOTICE TO BIDDERS

Sealed bids will be received until 8:00 P.M. EST on August 29, 1961 in the office of the City Clerk of Hallandale, Florida for the construction of a sanitary sewerage system to be known as "Sanitary Sewerage Improvement No. 1". All bids will be opened and read publicly in the City Commission meeting room after the appointed hour for receiving bids. Bids received after the appointed hour as stated above will not be accepted.

Major items of the work include the following:

(1) Approximately 36,000 linear feet of 8, 10, 12 and 15 inch diameter main line vitrified clay pipe gravity sewers, manholes and appurtenances including pavement and other restoration.

(2) Approximately 12,000 linear feet of 4 inch and 14 inch diameter cast iron force mains and appurtenances.

(3) One sewage pumping station, one sewage lift station and renovations to one sewage lift station.

Plans, specifications, contract forms and bidding blanks are on file in and may be obtained from the office of the City Clerk.

A deposit of $50.00 for a set of plans and specifications and $35.00 for each additional set of plans or specifications will be required. All deposits for plans and specifications will be refunded upon their return in good condition within 10 days of the opening of bids. All bona fide bidders shall be returned their deposits.

A certified check, cashier's check or bank officer's check for 5% of the total amount of the bid made payable to City of Hallandale, Florida, or bid bond in said amount written by a corporate surety company holding a certificate of Authority from the Secretary of the Treasury of the United States as acceptable sureties on Federal bonds, said bid bond executed and issued by a Resident Agent licensed by and having office in Broward County, Florida, representing such Corporate Surety, shall accompany each proposal as evidence of the good faith and responsibility of the bidder. This check or bond shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

The City of Hallandale reserves the right to waive any informality in any bid, to reject any or all bids and to hold all bids, bid checks or bonds for a period not to exceed 45 days from the date of receiving bids, such period being used for the consideration of the bids.

Ralph Smith
City Manager

District of Columbia—Sewer & Tunnel Construction—Dept. of Sanitary Engineering, D. C., Office of the Potomac Interceptor, July 12, 1961. UNIT #1, the VIRGINIA TUNNEL and POTOMAC CROSSING OF THE POTOMAC INTERCEPTOR SEWER, near Great Falls, Fairfax County, Virginia, Invitation No. C-61143-S (Contract No. DCF C-18957), consisting of the following: TUNNEL CONSTRUCTION: 13,835 lin. ft. 78" dia. concrete lined sewer in tunnel, including access shafts, junction structures and vent structures. OPEN CUT CONSTRUCTION: 3,094 lin. ft. 78" dia. reinf. concrete sewer pipe across Potomac River; 1,635 lin. ft. 54" dia. reinf. concrete sewer pipe. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM. EDT, August 9, 1961, in Room 424, 499 Penn. Ave., N.W.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.70 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.
SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: August 10, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and CANAL LAW, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 10th day of AUGUST, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, P. J. FULLER, District Engineer, 353 Broadway, Albany 1, New York						
Essex	FASS 61-6	Tahawus-Schroon River, Part 4, County Road 28 Proj. S-1047(4)	3.63	Top course Broken Stone, Bit. Double Surf. Treat. Twin Box Conc. Culvert, 1 Span 27.4'	$35,000 Plans $5	$627,000
Saratoga Warren (Rte. 9)	R.C. 61-82 C. 61-3	South Glens Falls Village: Saratoga Avenue and Main Street, S.H. 5598 City of Glens Falls: Glen Street Arterial Highway (Hudson River to Oakland Street)	0.28	Asphalt Concrete Reconstruction and Widening of Bridge Deck 736' Long, Prestressed Concrete Beam Bridge, 64.6' Span	$32,000 Plans $5	587,000
Saratoga (Int. Trg. Rte. 87)	FIM 61-2	Interstate Route 502 (Clifton Park to Malta) Proj. I-87-3(44)167	7.47	Plastic Pavement Markings	$4,500 Plans $5	80,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida	M 61-9	Nine Mile Spillway on the Erie Canal	....	Rehabilitation of Spillway and Misc. Gate and Channel Work	$9,000 Plans $5	175,000
Oneida	M 61-11	Schuyler Street Bridge Over Erie Canal (E-45) (Town of Marcy)	....	Removal of Structure and Misc. Work	$1,200 Plans $5	21,600
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, N. Y.						
Cortland (Rte. 13)	FARC 61-9	Dryden, S.H. 215; Dryden-Cortland, Pt. 2, S.H. 535 Proj. F.U.-513(6)	4.36	Asphalt Concrete, Type 1A	$50,000 Plans $5	952,000
Onondaga (Int. Trg. Rte. 81)	FIRC 61-128	Interstate Route 505 (Syracuse-Mattydale, S.H. 54-3 Includ. Interchange with New York State Thruway and 7th North Street, C.R. 221) Proj. I-81-2(61)	2.40 (4.10 Acc.)	Asphalt Conc.=0.63 Mi.; Cem. Conc. Pvt.=2.69 Mi.; Misc. Work=3.18 Mi.; Toll Utility Bldg., Plaza Canopy, Plaza Islands and Associated Work: 2 H.G.S. Comp. Beam, 4 Spa. 179.5' Tot., 4 Spa. 179.25' Tot.	$127,000 Plans $5	2,306,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, N. Y.						
Monroe (Int. Trg. Rte. 490)	FIC 61-15	Interstate Route Connection 590 (Rochester City: Eastern Expressway, Parts 2 & 3, S.H. No. FIC 58-2) Proj. I-490-2(25)	2.50	Roadside Development	$6,000 Plans $5	105,000
Monroe (Int. Trg. Rte. 490)	FIM 61-3	Interstate Route Connection 590 (Culver Road to Winton Road) Rochester Outer Loop, Part 2, FAC 59-8 & FASH 59-14 (Blossom Road to Winton Road) Proj. I-490-2(28), U-1097(8)	3.04	Plastic Pavement Markings	$1,500 Plans $5	28,500
Wyoming (Rtes. 39,19A)	FARC 61-130	Pike-Castile, Part 2, S.H. 8299; Castile-Portageville, S.H. 8164. Proj. F-453(5), F-380(9)	3.46	Asphalt Conc.=3.39 Mi. Misc. Work=0.07 Mi.	$24,000 Plans $5	421,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Jefferson (Int. Trg. Rte. 81)	FIM 61-4	Interstate Route 505 (Section 7AB-1) Jefferson County Line to State Highway 184 Proj. I-81-3(23)	4.60	Plastic Pavement Markings	$2,600 Plans $5	48,500
DISTRICT No. 10, A. M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., N. Y.						
Kings (Int. Trg. Rte. 278)	FIGE 61-2	Interstate Route Connection 512, Gowanus Expressway —Contract 6 (3rd Avenue at 53rd Street to 4th Avenue at 65th Street) Proj. EI-U-278-1(63)	0.80 (1.33 Acc.)	7½" Reinf. Conc. Slab Roadway=0.66 Mi.; Misc. Work=0.14 Mi.; Reinf. Conc. Ramps=0.53 Mi.; Sheet Asph. Pavt.=0.67 Mi.; Misc Work=0.13 Mi.; Elevated Structure Steel Girder with Conc. Slab= 3,474'; Ramps and Parkway Conn. 2,790'	$850,000 Plans $10	15,369,000
Nassau	FANE 61-1	Nassau Expressway, Contract 2 (Burnside Avenue to Lakeside Drive). Proj. U-1098(6)	1.20	Demolition of Buildings	$2,700 Plans $5	49,000
Queens	FAWB 1-1	Woodhaven Boulevard (Bridge Over Long Island Railroad). Proj. UG-1148(1)	0.34	Asphalt Concrete=0.34 Mi.; Rehabilitation of R.R.G.S. Over L.I.R.R., I-Beam, 7 Spa., 280.5' Tot.	$121,000 Plans $5	2,209,000
Queens	FINB 61-1 FAVWE 61-2 FAGCP 61-2	Interstate Route Conn. 515, Northern Boulevard, Cont. 1 (Grand Central Parkway to Flushing River), Van Wyck Expressway Extension (at the Flushing River Interchange) Grand Central Parkway Proj. EACI 678-1(58), U-1085(20), U-899(3)	2.02 (7.00 Acc.)	8"-10" Cem. Conc. Pvt. 2 @ 30' Var.=1.12 Mi.; Cem. Conc. Pvt. with Carb. Black=0.74 Mi.; Asph Conc.= 0.16 Mi.; Access=4.16 Mi.; Cem. Conc. Pavt. & 2.84 Mi. Asph. Conc.; 3 Hgs Comp. I-Beam, 10 Spa. 296.4' Tot., 3 Spa. 169.7' Tot., 8 Spa. 480' Tot.; 3 Viaducts (Hgs) Comp. I-Beam, 10 Spa. 726.5' Tot., 17 Spa. 814.5' Tot., 15 Spa. 626.4' Tot.; Hgs. Comp. Pl. Gr., 3 Spa. 147.0' Tot.; 4 Viaducts (Hgs) Comp. I-Beam & Pl. Girder 16 Spa., 1,277.5' Tot., 101 Spa. 3,160.2' Tot., 10 Spa., 529.1' Tot., 30 Spa. 892.9' Tot.; Rehabilitation of Portion of Girder Bridge, 4 Spa. 150' and of 2 Rigid Frame H.G. Spas. 1 Sp., 41', 2 Spa. 133'	$1,300,000 Plans $10	24,070,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act. of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: August 29, 1961

Philadelphia, Penna.
Procurement Department
Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2.30 P.M., Daylight Saving Time, on Tuesday, August 29, 1961, and opened at that time for:

BID NUMBER 2810—WORK NUMBER S-2842-F—WAKELING STREET RELIEF SEWER in Wissinoming Park (on Line of Vankirk Street) from Charles Street to Frankford Avenue and in Right of Way in North Cedar Hill Cemetery from Frankford Avenue to Bustleton Avenue and Benner Street intersection; Benner Street from Bustleton Avenue to Oakland Street.

PRINCIPAL ITEMS OF WORK

Excavation in Tunnel	28,700 cu. yds.
Excavation for Working Shafts and Manholes on Tunnel Section	1,150 cu. yds.
Excavation in Open Cut for Rectangular Sewer and Dispersion Chamber	2,900 cu. yds.
13 Feet Diameter Concrete Sewer in Tunnel	3,380 lin. ft.
12 Feet 3 Inches Diameter Concrete Sewer in Tunnel	790 lin. ft.
Sewers in Shaft	28 lin. ft.
11' 3" x 11' 3" Rectangular R.C. Sewer	200 lin. ft.
Reinforced Concrete Junction Chamber in Tunnel, 44 Feet Long	1
Dispersion Chamber in Open Cut	1
Manholes	4
Water Main Relay	150 lin. ft.

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 7, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, Room 1113, City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

Bids: August 10, 1961

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS FOR
CONSTRUCTION OF ADDITION TO NIAGARA JUNCTION R.R. SERVICE BUILDING IN NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SPECIFICATION NO. PA-N-23052
NIAGARA CONTRACT NO. N 43

NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for construction of an addition to the Niagara Junction Railroad Service Building, in Niagara Falls, Niagara County, New York, until 10:30 A. M. Eastern Daylight Saving Time on the 10th day of August, 1961, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The work under this contract consists of the construction of a building approximately 30 feet by 75 feet. The building will have a first floor at grade with block and brick walls, interior partitions and appurtenances including electrical and mechanical services. Minor work shall also be performed in the existing service building.

All work shall be completed on or before February 1, 1962.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston, 10, Massachusetts, and may be inspected by prospective bidders during office hours.

OFFICIAL PROPOSALS

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the total of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-N-23052

Bids: August 22, 1961

City of Sioux Falls, South Dakota

ADVERTISEMENTS FOR BIDS
NOTICE TO BIDDERS

Sealed bids will be received by the Board of Commissioners of the City of Sioux Falls, South Dakota, at the Office of the City Auditor of said City on August 22, 1961, and will then be publicly opened and read.

Such bids to provide for the construction of a Parking Deck over the Big Sioux River at 9th Street in the City of Sioux Falls, South Dakota. Plans, specifications and contract documents may be received from the Office of the City Engineer at the City Hall upon a deposit of $25.00, which will be refunded to bidders upon returning plans and specifications in good order after bids are opened.

Separate proposals will be received on:
Contract No. 1—General Contract
Contract No. 2—Mechanical and Plumbing
Contract No. 3—Electrical

Payment will be made in cash on monthly estimates.

By virtue of statutory authority preference will be given materials, products and supplies found or produced with the State of South Dakota.

Each proposal must be accompanied by a certified check, cashier's check or draft for five per cent (5%) of the amount of the bid, such check to be certified or issued by either a State or National bank domiciled within this state and payable to the City of Sioux Falls, South Dakota. This sum is a guarantee that if the proposal is accepted a contract will be entered into and its performance properly secured.

The said City reserves the right to reject any or all bids, and to waive any informality in any proposal.

CITY OF SIOUX FALLS, SOUTH DAKOTA
G. L. Sutton, City Auditor

Bids: August 10, 1961

Delaware River Port Authority of the Commonwealth of Pennsylvania and the State of New Jersey

Administration Building
Camden, New Jersey
BENJAMIN FRANKLIN BRIDGE
CONTRACT NO. 10-E

Sealed bids will be received for Demolition and Removal of Buildings, Backfilling, Grading, Cindering and Miscellaneous Work, at the Benjamin Franklin Bridge Site, Camden, New Jersey, known as Contract No. 10-E, at the office of the Director of Engineering of the Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Camden, New Jersey, until 2:00 P. M., Eastern Daylight Saving Time, Thursday, August 10, 1961, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for the bidders is given in the Contract Documents and Specifications for this Contract, which may be obtained upon deposit of $10.00, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the amount of $5,000, payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, together with a financial statement and a list of comparable work successfully completed, all of which must not be enclosed with the sealed bid but handed in separately. The surety's consent must be shown. The bidder to whom the Contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received, to

OFFICIAL PROPOSALS

reject any or all bids and to award the Contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
C. H. McWILLIAMS
7/20/61. SECRETARY

Bids: August 24, 1961

The Port of New York Authority
Port Authority Building

ADVERTISEMENT
ALTERATIONS TO SOUTH EAST CORNER ENTRANCE TO SECOND FLOOR
CONTRACT EXD-240.001

Sealed proposals for alterations to the south east corner entrance to the Port Authority Building including installation of stairs and moving stairs, and rehabilitation of office and store areas will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, August 24, 1961, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, whre the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, July 27, 1961

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5634) will be received at Dillon, Montana, until 10 a.m., Mountain Standard Time, August 24, 1961, for furnishing labor and materials for Clark Canyon Dam, East Bench Unit, Montana, Missouri River Basin Project. Location near Dillon, Montana, in Beaverhead County. Principal items are excavation 2,390,000 cu. yds.; earthfill 1,805,000 cu. yds.; concrete 13,200 cu. yds.; and other work. Completion time 1100 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 870, Dillon, Montana; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

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City Engineer—in a midwest county seat city of 5,000. Take charge of street and sewer program. Work closely with water department. Must be civil engineer registered in Iowa. Salary open. This is a new position—service has been on consulting basis. Send resume to City Clerk, Charlton, Iowa.

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Electrical Engineer—Estimator—man with experience in electrical estimating particularly in industrial, pole line, and power plant work. Reply to "Estimator" Box 1078, Columbus, Ga.

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ENR—T1/3

Forceful Action

THE BUREAU OF PUBLIC ROADS has been discharging effectively its responsibility to see that federal-aid highways are properly administered and built. Generally going the extra mile in dealing with problems encountered by the states as they locate and build the roads (see p. 50), BPR has also been resolute about stopping the states from improper handling of their part of the partnership.

The most dramatic action so far was the Bureau's stoppage of funds, virtually freezing federal-aid highway work, in New Mexico. The move came as a direct result of seriously corrupt practices in that state revealed by hearings of the Blatnik committee (ENR July 13, p. 96). The Bureau had already refused to approve individual New Mexico projects, but the shocking behavior of state employees and contractors, brought out by the congressional investigating committee, caused the stop-order on federal-aid funds. BPR's no-nonsense action certainly should force New Mexico to clean up its mess.

In Massachusetts, strict adherence to the rules stopped the state's right-of-way acquisition more than a year ago to force correction of irregularities. Federal funds were withheld, and it was only last month, after BPR people were satisfied that the previous irregularities in Massachusetts had been corrected, that the major portion of these funds was released.

In Virginia, Bureau personnel refused to revise a route location in the face of strong pressure from the state. They rejected requests to reverse a decision made more than two years ago to locate Interstate 64 west of Richmond. The Highway Commission and the governor carried the fight to Washington, appealing to Commerce Secretary Luther Hodges. Secretary Hodges, declining to interfere with the Bureau's decision, recently told Virginia, "It is our opinion the approved route has superior benefits . . . shorter distance, less cost and greater service."

The Bureau of Public Roads is to be commended for these evidences of the determined way it fulfills its obligations to the public.

Call for Action

IT IS ALWAYS GRATIFYING to see the good work of a small group of men gain the acceptance and support of the larger group they have represented in their labors. It is thus pleasing to find that the majority of civil engineering educators favor a resolution written over a year ago by some 30 from among them. The resolution (ENR June 22, p. 51) proposes a pre-engineering program to precede a fifth year before the first civil engineering degree. The purpose is to upgrade the education of future engineers and attract better students to the civil branch of the profession.

While many might question the concern often expressed over loss in numbers of students graduating in civil engineering, few would question the desirability of enlisting graduates of improved quality.

The resolution passed by the educators asks for support from the societies within Engineers' Council for Professional Development, and Engineers Joint Council. It urges ECPD and EJC to act on concurrent resolutions. It deserves that support—as do the educators who worked so hard and long on it.

Brave New World

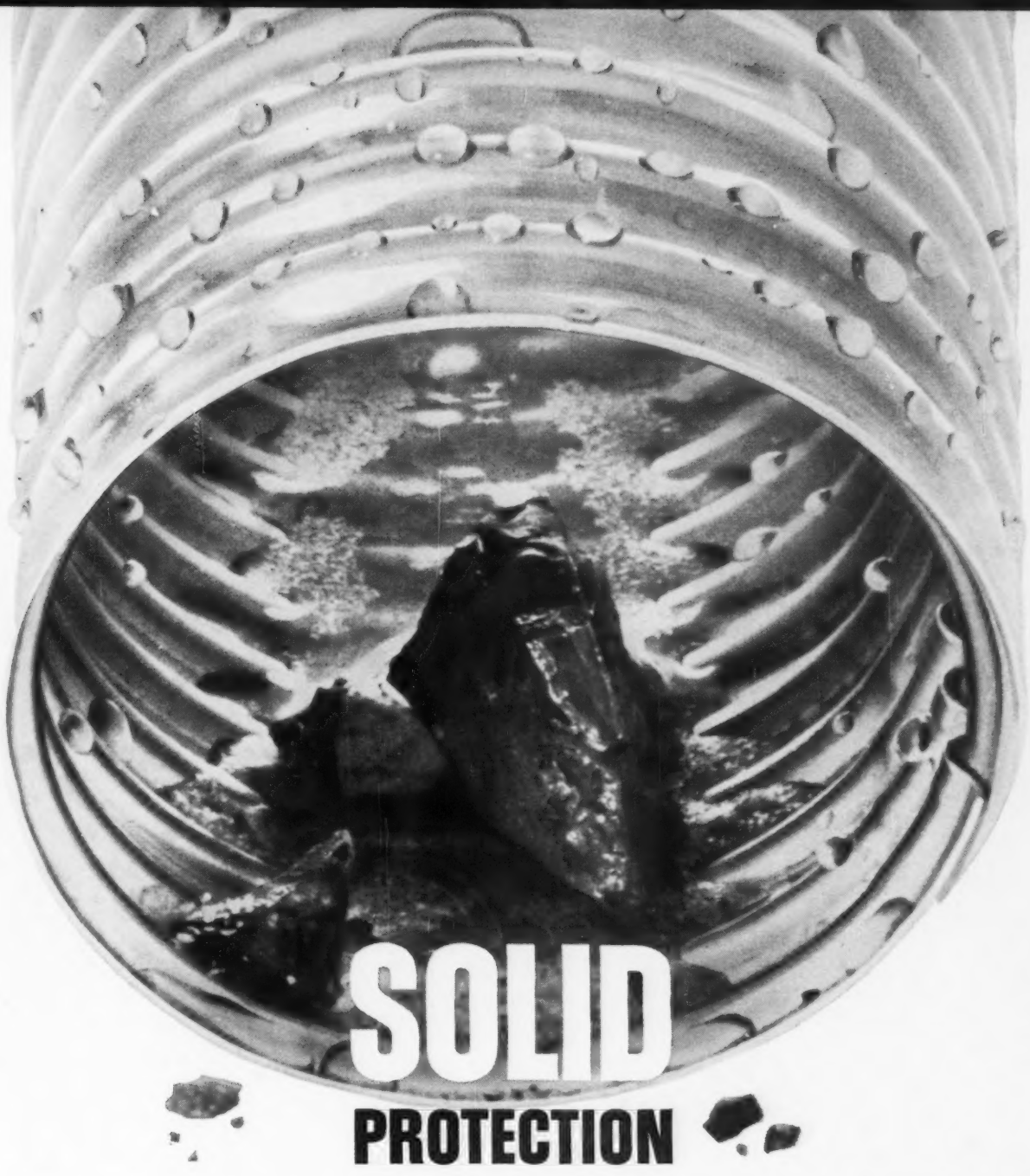
THE IDEA OF PLANNED OBSOLESCENCE in the homebuilding field may not shock Americans, who have been more or less conditioned to such Madison Avenue thinking (ENR Mar. 2, p. 72). But when a prominent Polish architect defends the idea before an international assembly of architects representing 47 countries, and escapes unharmed from the rostrum, one marvels at how such a notion can travel around the world so fast and gain acquiescence, if not approval.

The theme of the Sixth Congress of the International Union of Architects, held in London early this month, was "New Techniques and Materials, Their Impact on Architecture." Polish architect Jerzy Hryniewiecki, one of three major speakers, cited the change in living patterns wrought by technology and population mobility as pointing inevitably toward a change in attitudes toward housing. Because of their impermanence, houses will become like automobiles, according to Mr. Hryniewiecki (whose war-ravaged country is still unable to provide adequate, let alone fashionable, living quarters for so many of its people). Everyone wants a new car; everyone will want a new house.

We can assume that houses, like automobiles, will be considered fit for use only while they stay in style. To the consternation (or joy) of do-it-yourselfers, major house repairs will go out of fashion. After its short, commercial life, the house will simply be rolled off its foundations and hauled away to the housing junk yard.

To be sure, the assembled architects focused their attention on many other aspects of the forthcoming Brave New World of architecture. They expressed justifiable enthusiasm for prefabrication and the prospects of more dramatic structural forms in the future. About other problems they expressed some misgivings. The horrors of "pseudo-morphology" and the problem of avoiding a drab uniformity in mass-produced buildings provoked thoughtful frowns.

But one can hardly escape the disquieting thought that the idea of obsolescence designed into housing may have the most lasting significance of anything said at this international meeting. Like Gresham's Law favoring circulation of cheap coins, a sort of cultural Gresham's Law seems to favor the circulation of barren ideas.



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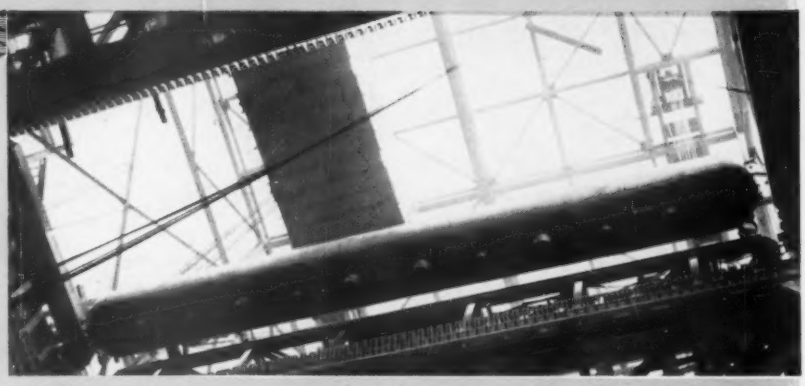

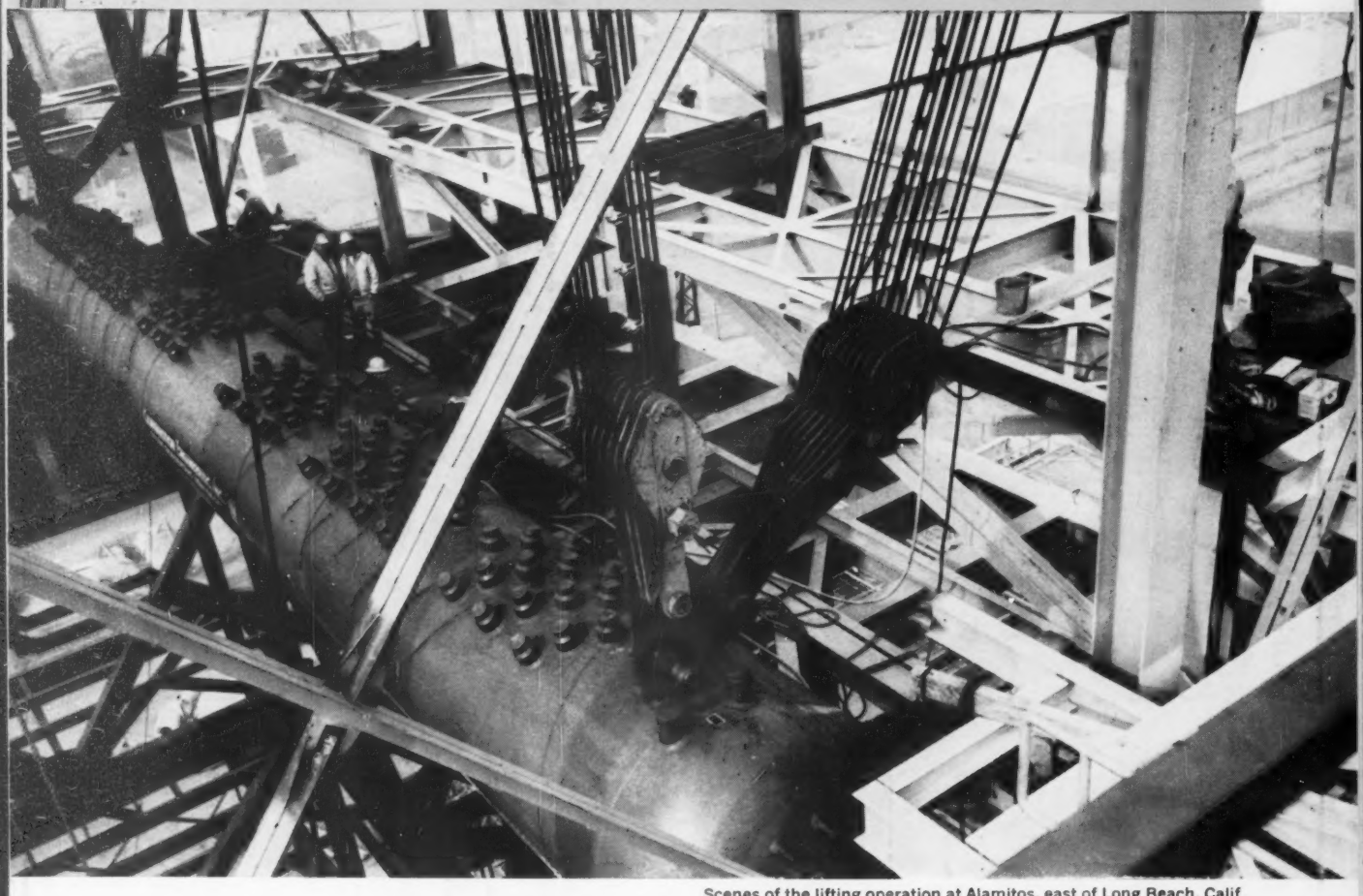

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